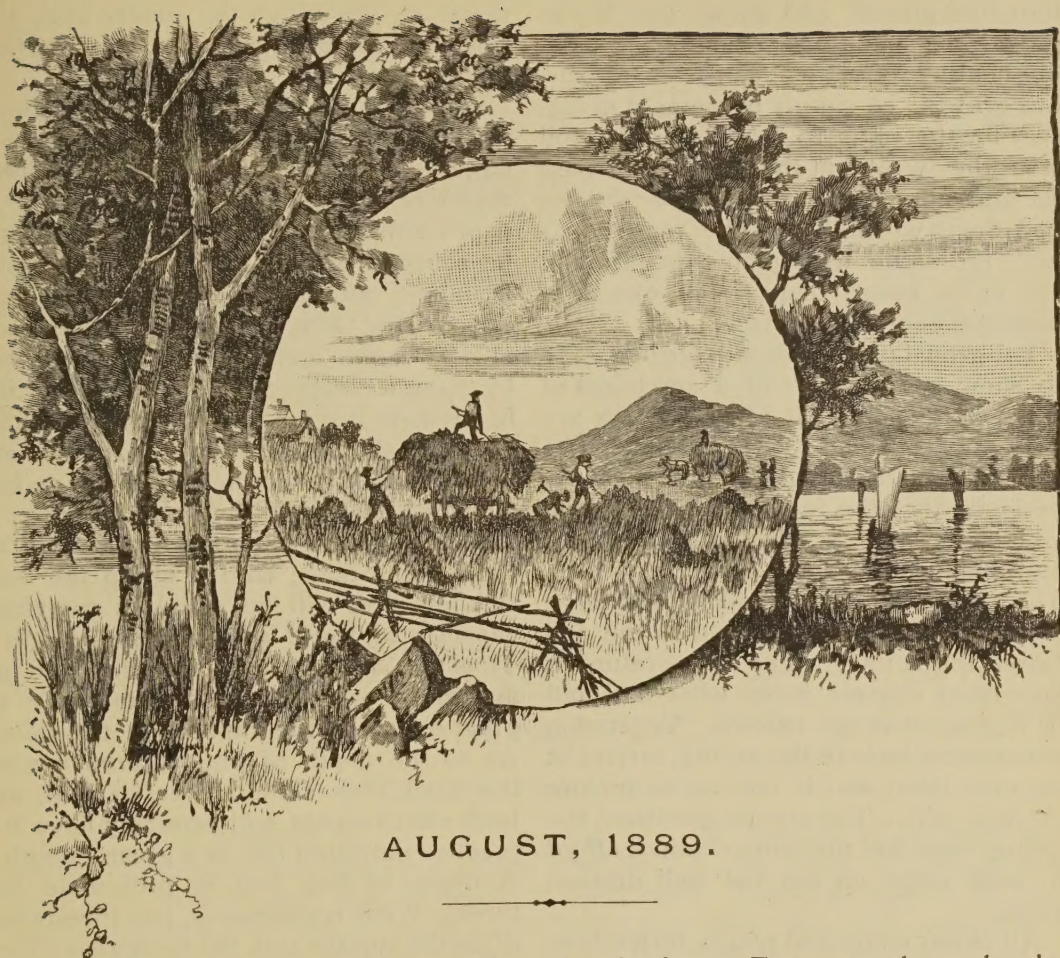


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PASSION FLOWER-EYNSFORD GEM.



AUGUST, 1889.

THE DRAINAGE OF LAND is a subject which, at this stage of agricultural progress, should be so well understood as to require little, or nothing, more to be said in regard to it. But a practical acquaintance with the cultivators of land, and a knowledge of the practices they employ, make it certain that good drainage, whether it be understood or not, is not properly estimated, much less is it generally employed.

The rains of the past June, that have fallen in most parts of the country, have made apparent to the most careless observers the necessity of greater attention to drainage operations. Many will, of course, see the necessity of nothing more than wider and deeper open ditches to take away the surface water which the present season has drained away far too slowly, even from what are considered high lands; but the closer observer will perceive that the water below the surface in too great quantities, hinders the proper root growth and supplies the necessary plant nutriment in too di-

luted a form. For some, then, who shall read these lines the observations and advice here contained may prove of value by leading them to a decision about taking immediate steps toward the better drainage of the farm, the garden or the fruit grounds.

Probably no better illustration can be given of the effects of water on growing plants than what we see in the case of plants growing in pots. Every pot is provided with a hole in the bottom to allow the water to drain out when the soil becomes saturated, and, with the exception of water or bog plants, this drainage is a necessity. If we see a plant whose foliage turns yellow, or drops off, or which fails to grow, and whose whole appearance, is unthrifty, we are almost sure to find the trouble to be at the roots, and not unfrequently we find the drainage is clogged and the roots are inactive. Turning the plant out of the pot, placing some bits of broken crock at the bottom, and then some coarse material, the plant is returned to its place and filled in with

fresh soil, and in a short time it starts into new growth and shows that it can grow if the conditions are suitable. Without healthy roots there can be no vigorous growth. A supply of water is necessary for the roots to take from the soil what they want, but the water must pass off and not remain stagnant, or disease and death will follow. The case is exactly the same with plants growing in the fields where there is an excess of moisture below the surface.

Pot-grown plants may still further serve to show a bad effect of a surcharge of water in the soil. All plant-growers are very careful in cold weather about watering their plants at night, knowing by experience that the increased evaporation will too greatly reduce the temperature and thus check and stunt the plants. The case is the same in effect over large areas where the water is held in the soil below the surface. The temperature is kept many degrees below what it would be if good drainage existed. Vegetation commences later in the spring, arrives at maturity later, and is coarser in texture on such soils. The market gardener, the fruit-grower and the farmer cannot afford to raise crops on any but well drained lands.

All of our cultivated plants thrive best on soils where the water quickly passes away. Even the Cabbage, the Cauliflower and the Celery, which are especially grateful for an abundance of water, show their resentment to stagnant water by stunted growth and general unthriftiness. In well drained lands the roots of plants are able to penetrate to a much greater depth, and thus the capacity of the land is increased, while its superficial area remains the same. If some of our readers have an ambition for more acres, let them ask themselves the question, if the land they now have is bearing to its full capacity? To what extent may the present area be increased in productiveness by judicious and economical drainage? The question of drainage takes precedence of that of manure, important as that is, takes precedence of methods of culture, of improved implements, in fact, of all cultural operations. From the fact that roots can penetrate to a greater depth in drained lands, vegetation on such soils can sustain itself far better even in times of drought; the available soil of

undrained land is shallow, and when these are dried out the plants have no resource, for they cannot penetrate the un-aerated subsoil.

Some of the principal points in under-draining are a good outlet, a sufficient fall, tile of sufficient size, and sufficient depth of drains. As to the outlet, a depth sufficient to allow a good fall must be secured or there can be no effectual drainage; with most lands this is not difficult, but with others it can be had only at some considerable expense, or by going a comparatively long way for it, in any case this is the first point to which attention should be directed. A fall of at least one foot in six hundred ought to be aimed at, even in flat lands. The greater the fall the more water the tiles can carry in the same time; with a sharp fall the smallest tiles will be equal in carrying capacity to those several times larger. Thus the size of tile to be employed in any given case will be determined to a great extent by the rapidity of the flow. As to the depth of drains, three feet is the least they should ever be laid, as both effectiveness and economy have in practice indicated this or a greater depth. A depth of four feet is preferable to three. What is desired is, not merely to drain the surface soil, but to increase the depth of the soil that may be available for root growth. The deeper the drains are laid the fewer in number are required for the same surface, so that even economy in the first cost dictates deep drainage. The arrangement of drains depends upon the peculiar conditions of each piece of ground, and these should be carefully examined and studied in advance of all work.

It is often the case that a piece of ground is unusually wet on account of water descending from higher grounds, and sometimes it will be found advisable by a cross-drain to intercept and collect the water, thus preventing it in its course through the lower land, and greatly simplifying the thorough drainage of the whole piece. Ordinarily level lands requiring drainage usually need a system of drains that effect the whole area, and whether these drains shall be laid parallel or be made to intersect one or more diagonal drains will depend upon the outlet.

The distances apart at which drains

can be laid to the best advantage have been fairly well determined by numerous experiments, and a good authority on this subject says :

"The frequency of drains is so far dependent on the depth, that it cannot be settled till the latter is determined ; and yet the mutual relation of the two is very far from being reducible to one fixed rule. In porous subsoils, drains draw from a far wider area than in clayey subsoils, and they may, therefore, be placed at correspondingly greater intervals from one to another ; and even in clayey subsoils they considerably vary in the breadth of area from which they draw, yet act very nearly in the proportion of the homogeneousness, or of the gravelly mixture of the clay. At three feet a drain, in the very stiffest clay land, draws from six or seven feet on each side of it ; in a partially impervious subsoil, eight or nine feet on each side ; in a subsoil mediate-

pervious and impervious, twelve or thirteen feet on each side ; and in very favorable varieties of subsoil, from fifteen to thirty-three feet on each side ; so that the doubles of these distances are, in the respective cases, the proper intervals between the drains. But in every instance, the rule, so abundantly verified by the experiments in pipe-tile draining, may be regarded as applicable, that when the drains are made shallower, they require to be closer, and when made deeper they may be at remoter distances."

The practical application of the thoughts on this subject that have been here presented, it is hoped that many of our readers may make, for the practice of under draining lands is yet in its infancy in this country, and most cultivators do not know by personal experience the great advantages to be derived from it. Intensive culture demands underdrainage as a first step.

TULIP PLANTING.

Nothing can brighten up the garden better in the spring than masses of Tulips in bloom. The flowers are, of course, individually beautiful, and a few in a pot in the window, or a few in a bed outside, will not fail to draw admiration, but there is something grand in a great mass of glowing colors, such as shown by a large bed of Tulips. The illustration on the next page is that of a tulip garden in England, as given by the London *Garden*. The Tulip is a hardy bulb, and if left in the ground will continue to produce its flowers year after year, though unquestionably the bulbs deteriorate more rapidly when thus left to themselves than when taken up at the end of spring and dried off, and kept in a cool, dry place until September and then replanted in freshly prepared soil. When left to themselves they never have quite a fair chance, during their resting season the ground will be occupied with other plants either intentionally placed there to furnish the beds, or else weeds that spring up. In this manner the soil is rapidly exhausted, and the application of fertilizers without disturbing the bulbs can only be imperfectly done. The lifting of the bulbs, then, when mature, which is indicated by the yellow and withering foli-

age, is in all cases to be advised when the vigor of the bulbs is desired to be maintained. The least care is to leave bulbs to do what they will from year to year, and more or less bloom will be had for a number of years, but not of the highest standard of quality. In his fascinatingly written book, *The Garden's Story*, which has just been issued, GEORGE H. ELLWANGER tells of planting Tulips with Oriental Poppies: "I have planted the tall, late-flowering Tulips freely among the Poppies, the luxuriant foliage of the latter concealing the naked base of the Tulips. A mass of Tulips thus grown produces a much finer effect than when bedded by themselves. The Tulip invariably looks better in neglected gardens for this reason, it is seldom seen rising from the bare earth, generally springing from the grass or shrubbery, or at least having a background of green."

Of the Single Early Tulips, as well as the Late Show varieties, there is a great variety of colors to select from, and one can indulge his taste by the selection of a long list ; however, there is no better way, when the names are not cared for, than to procure the bulbs in mixed variety, and the different sorts will be as numerous as can be desired.

The Parrot Tulips are also very showy, and a mass of them makes a gay sight. If one cares more for the flowers for vases for in-door decoration than for the show in the garden, and should cut them as soon as they open, they will exhaust



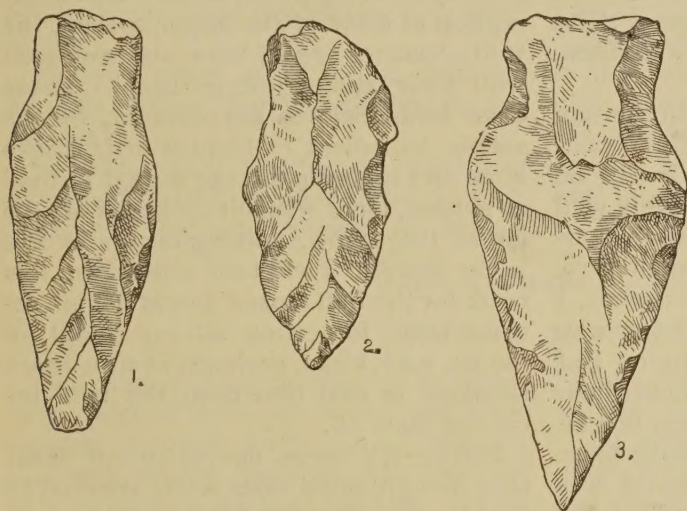
A TULIP GARDEN.

the bulbs but little, and the latter will continue to be satisfactory a number of years longer than if the bloom is allowed to mature.

Before planting Tulip bulbs, and especially if it be intended that they shall remain from year to year without lifting, a good manuring should be given the ground. Old manure from cattle sheds is best for this purpose, and with a good dressing of it and deep digging, one has a right to expect good bloom and plenty.

CHIPPED FLINTS.

It is spring; the early woodland flowers are coming forth in their order, the distance is mellowed with haze, and the mild warmth makes out-door day-dreaming pleasant. Here, in these woods, far from the great currents of human life, the sights and sounds so exactly reproduce those of former seasons that I am scarcely aware, as I lie here on this violet-strewn slope, whether it is this year, or last, or next. The sun of May has looked into this little valley and brought forth the Violets so many, many years! Once the Indian glided through the forest, to-day, though the landscape as far as I can perceive, must be nearly the same, with thrushes and oven birds singing their old songs, I am here, and, lulled by the murmurs of the little stream, almost to the point of fancying the world a thousand years younger, and that I am an Indian myself. I have, at least, one of his stone arrow-heads, though, I believe, I picked it up yonder, and I wonder, as so often before, at the cunning skill which shaped its brittle, refractory substance so neatly; certain



instant failures of my own have given me great respect for the arrow-maker's art. Very likely no good chipper would have tried to work my weathered pebbles, the countless pits and quarries that follow the outcrops of silurian hornstone, etc., show that good material was worth long journeys and much labor; the chips from an Ohio locality, known by their fine colors, are found to-day in a dozen States. The flakes struck by the mason's hammer from the corniferous horn-

stone of Western New York are sometimes keen enough to shave wood, but no quality of stone would have allowed me to succeed; the art is lost, to me, at least.

One's thoughts turn more Indianward in spring, when, as JOHN BURROUGHS says, the smoke of his campfire seems to tinge the distant woods, partly because his mode of life seems more pleasant at that time—being an Indian must have been a serious affair in these parts in winter—and partly because his relics of stone are mostly found then, the summer's herbage and the winter's snow hiding them with equal facility. THOREAU speaks of going, in early spring, to look them up; it seems to have been an annual observance with him, but I never yet found one by searching for it. I cross wide fields of bare earth where millions of pebbles, washed clean by the rain, are lying, with eye intent, but though fragments of corniferous flint, or hornstone, the arrowmaker's material, are plenty, occurring here as glacial drift, the arrowheads are not to be found. I am dragging or hoeing, thinking of other things, and I see one. I almost believe they have protection from the seeker. Considering that they are never found in the woods, very seldom in grass land, that they are mostly picked up while planting or hoeing, that their dull color easily escapes our eyes, mostly looking in other directions, the frequent finds show the entire number buried in our soil must be inconceivable. The building of the pyramids was a slight affair beside chipping the flint implements of this continent. Their perfect indifference to locality, and all the evidence points to vast periods of time during which each generation made an imperceptible addition to the great mass already buried. What memorial so simple, significant, universal and durable is our race likely to leave behind it? Metals will rust, pottery and glass will only remain as wretched fragments, brick and stone will find the tooth of time much sharper here than in Mediterranean lands; few of their monuments would be visible were their climate

like ours. But bring the feathered shaft and a cord for tying it on, and this immortal implement can serve as well as one fresh from the maker's hand. With all his skill, the Indian relied somewhat on chance for the shape of the flakes he struck off by heavy blows, the variety in size, form and outline is therefore infinite. One will be solid and heavy, another thin and light; some not more than an inch long, others five inches or more. This one, Fig. 1, is of black hornblende, and is so roughly formed that one imagines the worker to have had great difficulty with its tough, hard substance, and and see Fig. 2's outline, bent and twisted, yet it has a keen edge, a point more looked after than regularity of form, apparently.

Lying here in the woods, with the sun shining in midst the great trees, and casting the shadows of the young leaves on the earth, surrounded by the lovely wild flora which flourishes on forever, perfectly unconscious of the human race, whether of the red or white variety, I idly try to recall the solitary hunter who shot and lost this arrow, perhaps on just such a morning as this, so many hundreds or thousands of years ago, imagining a serene, untroubled life among these pleasant hills, because the world was young, and he is so far away; while the blood stains, if ever there were any, have

been gone from the flint so long, a mistake, no doubt, very likely I am a better Arcadian than he was. Those who claim to know, tell us the range of the savage's perceptions is very restricted, and his communion with nature mostly a fiction evolved from our imagination. Why should I lament my civilization, when a few minutes walk from my door will lead to forest depths so wild and remote that with a slight failure of memory and dependence on what I actually see, I should imagine the wilderness to be co-extensive with the continent? This is the primeval forest, the great trees tower as grandly as ever, and with the possible exception of some of the larger species, the wild creatures are all here, and going on with their affairs just as usual. These oven birds, *Seiurus aurocapillus*, by the simple expedient of turning their backs upon and ignoring all our doings in field or garden, have remained aboriginal—so far as they know, nothing occurs except in the woods. I will take a leaf from this book for the half dozen hours I can remain here, forgetting all my round of duties, and I can, perhaps, absorb more sunshine in that time than the best Indian of them all.

NOTE.—All these figures are of exact size, though small ones were selected to save space. Fig. 3 is fairly typical.

E. S. GILBERT, *Canaseraga, N. Y.*

WEEDS, WHERE DO THEY COME FROM?

What boy raised on a farm, or at a home where there was a large garden, but has asked this question? How many weary hours he spent in the hot sun endeavoring to destroy, once for all, these vile pests, and how, over night, they seemed to grow beyond his power to destroy.

What is a weed? "Any useless plant," one says. Another has said, "any plant whose use is not yet discovered," but a better definition is, "any plant out of place is a weed." Thus the beautiful grass of the lawn transferred to the Strawberry bed, becomes an annoying weed, and so may be considered and treated the numerous young plants of the Strawberry, Raspberry and Blackberry which we see between the rows.

The ordinary weeds are, however,

plants for which we have no use. Where do they come from? All plants come from seeds or buds of some form. When, then, weeds spring up in the garden, they come from seeds, which, in some manner, have gotten there. What are these means. A few of the more common only can be named:

1. The seeds of weeds are often present among the seeds which are sown. Farmers must be on their guard constantly when they purchase grass seed, or else they may sow their farms with noxious weeds.

2. Many weeds are introduced into the garden with the manure used. Stable manure contains the seeds of all the weeds which existed in the hay and straw of which the manure was formed. The writer has seen different crops of

weeds growing on his grounds, brought from different stables. Commercial fertilizers are free from weeds.

3. The wind blows many seeds into the garden. Some seeds, as those of the Dandelion and Thistle are formed for this mode of dispersion.

4. The melting snow and running surface waters may introduce other weeds from our neighbor's grounds. Streams running through the garden may carry many seeds.

5. Other seeds are in the droppings of birds, and some are carried in the mud on their feet.

6. Railway trains carry weeds and distribute them about the country with great rapidity.

7. Some seeds cling to our domestic animals, and are thus introduced into our grounds.

8. Other seeds cling to the clothing of man and are carried from place to place. Whenever an army passes through a

country, weeds unknown in the region before spring up. Thus, in Georgia, after SHERMAN'S invasion, and in France, after the invasion of the Germans, pestilential weeds are said to have appeared in abundance. The Broad-leaved Plantain is called by our Indians the "White Man's Footmarks," because it springs up on his camping grounds.

A large proportion of our worst weeds have come to us from the Old World, as one will learn from an examination of GRAY'S *Botany*. Some troublesome weeds have been introduced as plants for the flower garden. The Bouncing Bet, *Saponaria officinalis*, and the Toad Flax, *Linaria vulgaris*, belong to this class.

Some weeds promise to become useful in the future, as the Velvet Leaf, *Abutilon avicennæ*, yields a good fiber, and the various Milkweeds, *Asclepidaceæ*, furnish in their milky juice a considerable amount of India rubber.

PROF. GEORGE G. GROFF.

RURAL NOTES.

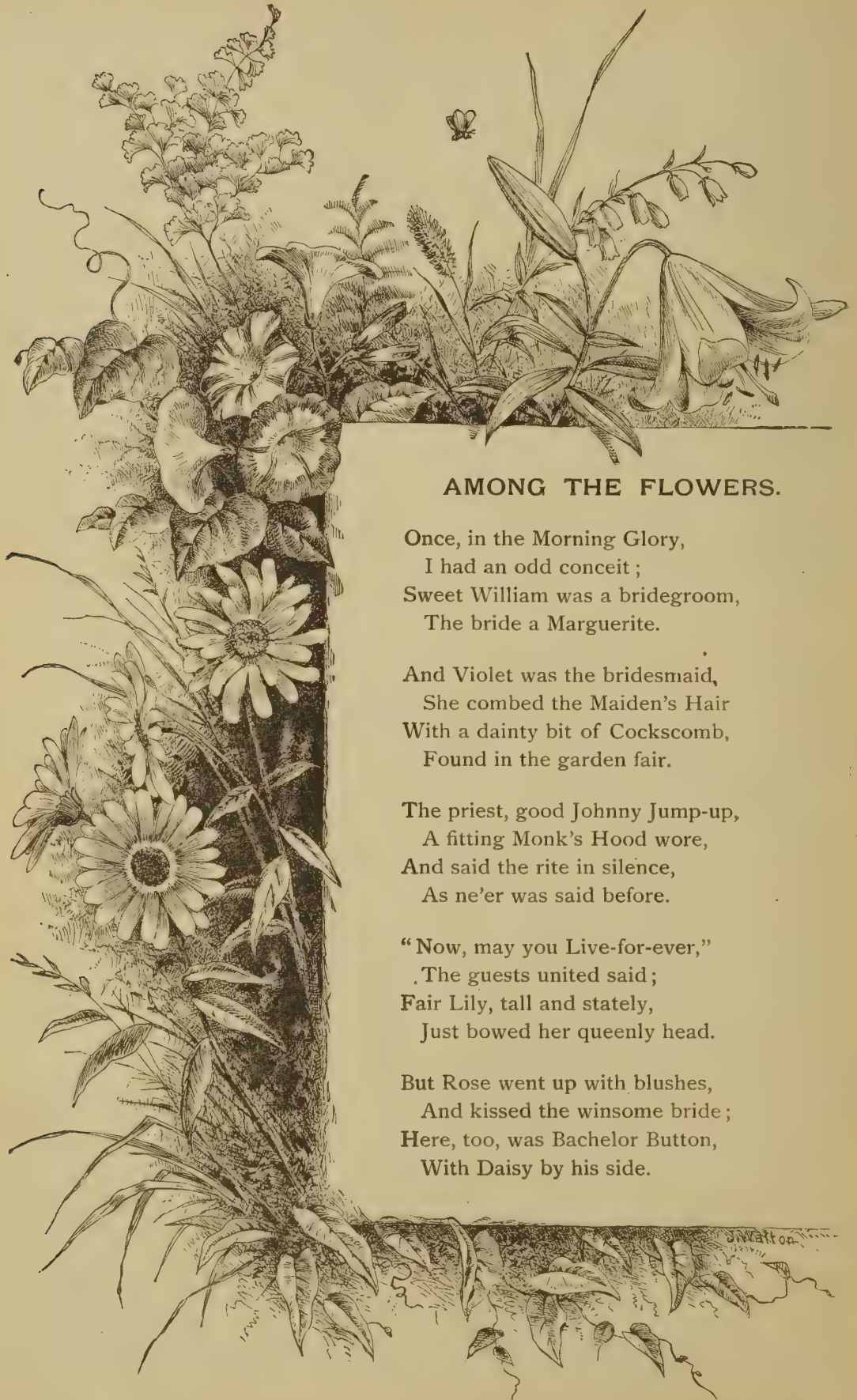
Our country is notorious for wastefulness. One of the most evident and inexcusable of these wastes is so common that one cannot avoid seeing examples of it on looking out over the fields almost everywhere through a car window. The timber is cut off a piece of land with the intention, perhaps, of seeding the ground with grass for pasture until the stumps rot. But the brush remains and is soon overgrown with briars and weeds, while cattle find nothing eatable but the sprouts from the tree stumps, which they soon effectively suppress, leaving a hideous waste—a disgust to the owner and a blot on the landscape. If a wire or two had been stretched around the "chopping," there would soon have been a thick, handsome piece of woods again, annually increasing in value and feeding the soil.

A late writer commenting on the deplorable destruction of all undergrowth and young timber on so-called timber land, by giving cattle the run of it and exposing the surface to wind and sun, so that little or no water of rains is absorbed, puts in a plea for the boys—the best of all the crops of the farm—who find interest and enjoyment in having, now and then, some sport in hunting small game in well

preserved woodland full of underbrush shelter. Preserve the woodland.

It is often and truly said that little vexations are more trying to human patience and endurance than the heavier but less frequent troubles. So we find it, too, on the opposite hand, that what seem trifling expedients and conveniences help enjoyment of life and work greatly. I will mention one of these little contrivances which changed frowns into serenity in almost every day cases about our garden work. We use prong hoes and rakes of different weights and size, and in putting them away in the tool house, like to hang them up handle downwards above the spade family. They would often fall when the handles were touched in getting other tools—hence those frowns. Picking up a broken cage-like rat-trap, one day, with a prong hoe to carry it out of the way, I thought I saw a use for it. It was soon opened out and tacked up in the tool house to receive the prongs of the rakes, etc., and they have ceased falling. The tools of that kind are much more easily hung up, too—the prongs never failing to catch in the long vertical interstices of the wire meshes.

W.



AMONG THE FLOWERS.

Once, in the Morning Glory,
I had an odd conceit ;
Sweet William was a bridegroom,
The bride a Marguerite.

And Violet was the bridesmaid,
She combed the Maiden's Hair
With a dainty bit of Cockscomb,
Found in the garden fair.

The priest, good Johnny Jump-up,
A fitting Monk's Hood wore,
And said the rite in silence,
As ne'er was said before.

"Now, may you Live-for-ever,"
The guests united said ;
Fair Lily, tall and stately,
Just bowed her queenly head.

But Rose went up with blushes,
And kissed the winsome bride ;
Here, too, was Bachelor Button,
With Daisy by his side.



When Blue-bell rang for breakfast,
They went in two by two ;
How Bouncing Betty hurried,
She had so much to do !

They ate the Butter-and-the-Eggs,
The Honey-suckles, too,
And then, from golden Buttercups
They sipped the morning dew.

They fanned with Princes' Feathers,
And all were gay, I ween ;
"No room is here for Bleeding Hearts,"
Quoth Lady-in-the-Green.

And some wore Lady Slippers,
And danced to music fine,
Of Lily-bells a-swinging,
All in the glad sunshine.

So, from the Morning Glory
Till Four O'Clock they stayed ;
Dear flowers of the upland,
Sweet blossoms of the glade.

JESSAMINE GREY.



PERENNIAL PHLOX.

In July and August, the two months of fiercest heat, come into bloom the Perennial Phloxes. When, for weeks and even months, no rain cloud cools and refreshes the earth, and even Poppies and Portulacas droop, these Phloxes grow as sturdily and bloom as cheerily as a Rose in the month of June.

A bed of many varieties, crimson, pink, lilac, or with stripes, ringed eyes, and self-colored clusters, is truly a charming sight; but along shady borders, looking cool and pure in the flickering shadow of foliage, it is the great clusters of the white Phlox which the eye lingers longest upon with a feeling of rest and refreshment.

Why, for display during the hot summer months, do we plant dazzling beds of scarlet Geraniums and many colored Coleus; when to look upon them when the air is a-quiver with heat, and the earth aglare with sunshine pouring down from a sky of brass, is painful to any eye? To turn from such beds to any white bank of blossoms set among green foli-

age, is an inexpressible relief, and so in midsummer this white Perennial Phlox, blooming on until frost, is a very boon and blessing. For cemeteries nothing is hardier or handsomer. Shade or sun alike seems grateful to it; a rich soil it certainly prefers, but whether of sand, clay or loam is immaterial. For reasons given, I like best to plant it in partial shade; large clusters of white flowers in hot suns are dazzling and blinding, but the fiercest rays do not tinge with color its spotlessness nor discourage its growth.

For all kinds of bouquet work and for vases, small or large, it is invaluable, as you may cut a stem three inches or three feet in length, as best suits your purpose, the great masses of white bloom from the central stalks, or the looser, more graceful side clusters.

Every shade of rich and dark or light and delicate coloring is to be found in these Perennial Phloxes, and we have some lovely native varieties, purple, lilac, crimson and mauve.

L. GREENLEE.

FOUR YEARS FROM THE WILDERNESS.

Both my "gude mon" and myself are great lovers of flowers. In our first home it was a drawback to our happiness that we had no place to raise flowers, except in the house and a little strip of backyard. There were no grounds in the village already laid out that suited us, yet we hated to take uncultivated, unimproved lots, and plant out to suit ourselves, thinking many years must elapse before the effects of our toil would appear in smooth lawns and well grown groups of shrubbery. We could buy seeds, bulbs and shrubs, we could hire workmen in plenty, but the time required to change a wilderness into park-like premises, could not be purchased.

Four years ago we decided to buy land in the suburbs, and do our own planning and arranging of grounds. To our surprise and delight, the improbable has become a realized fact, and in this short time our home has become to us, at least, a "thing of beauty." And the work we have been able to accomplish in the short space of four years emboldens me

to try and describe what we have succeeded in doing, that, if possible, others may be encouraged thereby to do likewise.

We had been cramped for room long enough. We wanted plenty of ground, and we got it. When the three former little divisions of land were united in one enclosure and neatly fenced, all praised the beauty of location. At the south and west, in front and at one side of the house was a wide level strip, destitute of trees or bushes. That was to be the lawn. The north half of the ground sloped gently down to a little branch, and was covered with a dense growth of trees of many native sorts, but aside from the natural beauty of the site there was little to encourage us. The whole enclosure, from one end to the other, was thickly dotted with stones, for we live in the Ozarks, and there are always stones to spare in this country. That part of the ground intended for lawns was covered with as rank weeds as ever one need care to see, *Datura stramonium*, *Mullein*, *Dog*

Fennel, Hoarhound and Plantain. Down under the trees the weeds were not so bad, but the wild grasses, Crab-grass, Wire-grass, and it seemed to us every other kind of grass were there in profusion. We counted eleven kinds of wild grass in our yard. Under the trees was a wilderness of Buck-brush—a perfect nuisance in this country—together with Hazel, Sassafras, Thorns and wild Roses. The trees themselves were thick and crowded, here one with a dead top, and there one with a burned and blackened base. But we were determined to clear it all out. It was not quick work, nor easy work. We hired help, and “all hands and the cook” worked with a will. We cut out two-thirds of the trees, leaving only sixty of the largest and best. By the use of ladders, dead branches were cut out and the lower limbs trimmed from the trees, so as to leave long, straight trunks. It is scarcely possible to imagine the improvement in looks caused by this thinning out. Then, with pick and hoe, every foot of ground was carefully gone over. The stones were picked up and removed, the weeds and grass pulled up, and every sprout of the underbrush uprooted by the pick. The brush never troubled us again, but the weeds and grass bothered us considerably for a year or two.

What is a lawn without green grass? We sowed our ground, the surface of which seemed so mellow and even, with Blue Grass and White Clover, which, in

this climate, make the best lawns. Under the trees, where the ground was in partial shade, the grass grew at once, with no trouble at all; but on the lawn, where we were so impatient to see it, it would not catch at all. All the long, hot summer our lawn, with its south and west exposure, lay under the sun's full glare, burning up the tiny grass roots and all. But we sowed and re-sowed until the yard at last was covered with its carpet of green.

While our grass was making up its mind to grow, we were not idle. Trees and shrubbery were planted and walks were built, and flower beds laid out. As our yard was very large we had plenty of room for these without having to cut up the lawn much, and everything was carefully planned. Our evergreen walk, our Rose hedge, our groups of shrubbery. Our trees planted were mostly evergreens and flowering trees, and in planting we tried to strike a happy medium between confusion and stiff formality, and I think we succeeded, and certainly we have received enough compliments about our place to almost turn our heads.

The sum of our experience is, if you want a place to suit you, plan it and lay it out to suit yourself. There is a pleasure in doing this, and a delight in beholding your success that never is known by those who buy their houses and grounds as they do their shoes and hats, “ready made.”

MRS. L. S. LA MANCE, *Pineville, Mo.*

THE OXALIS.

The Oxalis is one of the most cheerful little flowers for winter blooming. Of course, reference is made to those kinds that are especially adapted to winter use, such as *O. Bowii*, *O. lutea*, *O. versicolor*, *O. floribunda rosea* and *O. floribunda alba*. The summer blossoming varieties, such as *O. Deppii*, etc., cannot be coaxed to give flowers in the winter season, at least, not if they have bloomed in the summer garden. It is possible that bulbs might be kept dry till late in the season, then potted and brought into flower early in the winter, but that would hardly be of use when we have so many kinds “ready and anxious” to favor us abundantly through all the dreary season, that

our out door pets are taking their long rest “’neath a coverlid of snow,” or are tucked away in some warm, dry corner of the closet.

The summer blooming Oxalis is a very good edging or bordering plant, its even and luxuriant growth rendering it easy to avoid breaks in the line. If the weather is dry, water should be given. If planted in a poor, hard soil and neglected, we would not expect the result to be satisfactory. The Oxalis delights in a light, rich soil, with a good sprinkling of leaf-mold. When the bulbs are ripened they should be taken up and stored, as are *Gladiolus* bulbs.

Bulbs of winter blooming varieties hav-

ing had their rest, should be potted in August or September. They are partial to leaf-mold in the soil, but will do well without it if the soil be light and rich. After potting I keep them shady and cool, and only moderately moist till they have taken good root, then bring forward, giving all the light possible. I do not think there is any danger of too much sunshine for them in a common window. Do not let them suffer for water. When the growth, which, of both leaf and flower will be most luxuriant, seems to be completed, gradually withhold water, and let them rest in the summer. Even the Floribunda varieties will do much better for taking a good rest. When they are again ready to grow I shake them out

and plant the best young offsets, keeping them in shade at first, as before advised. I have observed that failures among amateurs are generally due to lack of proper rest, or to lack of sunshine in the growing season, when the stems will be limp and lifeless and the bloom feeble.

The Oxalis is an excellent basket plant, but I like best to grow the bulbs in neat boxes, not too deep, giving so much light that every one of the thousands of stems shall stand strong and erect; then let them have a low shelf or stand, and oh, how beautiful they are as we look down upon them. Often, when visitors are admiring mine, I say, "Taste it." "Why, it is nothing but Sheep Sorrel," they exclaim.

JULIA R. BEERS.

A LEGEND OF THE OLIVE TREE.

Near the banks of a swift-flowing river,
On rocky and sterile-soiled land,
Erechtheus builded a city,
Which through many ages should stand,
He was lord of a brave and free people,
And though the young city was small,
Yet Zeus foresaw it should, one day,
Be greater and grander than all.
Then a strife arose 'twixt fair Athene
And Poseidon—lord of the sea—
To fix by whose name the young city
Known through the whole region should be.
A day was then chosen by Zeus,
When he should adjudge them both well,
In presence of gods, who, undying,
On "Olympus the beautiful," dwell.
The day arose, cloudless and golden;
On his throne sat Zeus, serene;
About stood the gods—o'er the people—
Beside him sat Hera, the Queen.
At right stood Phœbus Apollo,
His famed golden harp in his hand;
His face shone with such wondrous beauty,
All war ceased that day through the land.
At left stood brave Hermes, the spokesman,
At rest was his magical staff.
Dionysos who loves, at the banquet,
The bead on the wine-cup to quaff.
Hephanistos, the "lord of the fire,"
And Hestea, who watches the hearth,
Aphrodite, who rose from the sea-foam;
To waken both sorrow and mirth.
Before them all stood the great rivals,
Awaiting the judgment to come—
As a lull doth precede the tempest,
So all they that waited were dumb.
High, in her left hand, held Athene
Her mighty, invincible spear;
Her face was from mortal sight hidden,
Her voice all the people might hear.

Poseidon, calm in his power,
Held in his right hand, strong and free,
The trident which rouses the earthquakes,
And cleaves e'en the depths of the sea.
Then up from his place rose the spokesman,
Young Hermes, his voice rang out clear:
"Now list to the will of great Zeus,
Ye multitudes, gathered to hear."
"Thus judgeth great Zeus between thee,
Athene and Poseidon,
The city, from this time henceforward,
Shall be called by the name of that one
"Who, this day, shall give to the people,
Called forth from the bowels of earth,
Held for their use, now and forever,
The gift of most genuine worth."
Poseidon rose in his power,
And smote the green earth where he stood;
Straightway to its depths it was shaken,
A chasm clave open the wood.
And out of the chasm came, leaping,
A horse, smooth and white as the snow,
His mane on the wind proudly streaming,
As he sped through the valley below.
Ah! strong was the breath of his nostrils!
His eye keenly glanced far and wide!
And rare grace and beauty contended
For mastery in his fleet stride.
Said Poseidon, "Now let the city
Be called by my name, for who then
Can hope to bring gift that is better
Than the horse to the children of men?"
All steadfast and still stood Athene,
Then slowly stooped down to the ground
And planted a seed therein; calmly
She gazed on the council around,
And, presently, all saw upspringing
From earth a small, delicate shoot;
Rose higher and higher its branches,
Forth sprang blossoms, buds and ripe fruit.

"My gift is far better, O, Zeus,"
 She said, "than the gift of the horse,
 For, with that shall come war and bloodshed,
 With sorrow and grief and remorse.

"My Olive tree brings peace and plenty,
 Health, strength, riches, happiness, fame;
 Shall not, then, the city, O, Zeus,
 Be henceforward called by my name?"

With one accord rang out the voices:
 "With her, Zeus, let honor rest;
 The boon which she bringeth is greatest—
 The gift of Athene is best!

"It cometh to us as a token,
 Our city shall be greater far
 In freedom than ever aforetime—
 Be greater in peace than in war."

Then Zeus, the great and the mighty,
 Bowed head, as a sign of assent;
 Be henceforth the city called Athens,
 The city of peace and content."

Athene stood still, fondly gazing
 O'er lands which were now all her own;
 Behind her the hills of Olympus,
 Where Zeus, the mighty, had gone.

She looked o'er the plain toward the city,
 Stretched out her invincible spear,
 Then said, "Here is peace, health and plenty;
 My dwelling shall henceforth be here.

"My children shall dwell here in freedom,
 And men shall come hence from all lands,
 To learn of what great deeds, and mighty,
 Are wrought by industrious hands,

"When aided by gods who dwell ever
 On the mountain Olympus' fair height;
 And here shall the bright torch of freedom
 O'er all the world shed its pure light.

"And here, in the homes of my people,
 Shall order and law be the guest,
 And all the world seeing, acknowledge
 The gift of Athene was best."

DART FAIRTHORNE.

IN SUMMER DAYS.

In summer days what joy to lie
 On grassy bank, and watch the sky
 Through latticed limbs, while low and sweet
 We hear the brook's low song, and beat
 The measure of its melody
 With blossom stalk of Briony,
 That strange, weird flower whose fragrance seems
 To fill the drowsy air with dreams;
 We seem adrift on slow, still tide
 Past meadows fair, and green, and wide,
 Where Willows lean down low to dip
 Their fingers in the wave, whose lip
 Holds up a kiss to every leaf
 Whose time of beauty is so brief
 In summer days.

In summer time I would forget
 All cares that vex, all vain regret,
 And, lulled in utter peace and rest,
 Dream on the dear earth-mother's breast
 Such dreams as only come to those
 Who read the riddle of the Rose,
 And hear the voices everywhere
 Of things in earth and things in air,
 That sing the happy roundelay
 Of love and peace. Away, away,
 All care and trouble; let me rest
 Like wearied child on mother's breast.
 I ask no more. O, grant me this,
 That I may know what joy there is
 In summer days.

EBEN E. REXFORD.

PORTULACA.

It was always called "Moss Rose" when I was a boy, and it was to be seen in every garden. I wonder why we do not see it oftener now. I remember that I once saw an entire dooryard, about twenty-five feet square, sown in Portulaca. The effect was somewhat startling when the flowers were at their best, and I don't know but that it was "too much of a good thing," but I would advise every flower grower to have a bed of Portulaca. It is an excellent flower for the amateur flower-grower. He can succeed with it if with nothing else. It will stand more neglect and abuse than any flower I know of, and it seems so grateful for a little care. Often it will grow where other things will not, and it never has to

be petted and coaxed and nursed into bloom. When the drouth has withered or killed your other flowers, the Portulaca will bloom on and on, its crimson and yellow and white and rose and prettily striped flowers will open wide every morning, giving a gay, bright tone to your garden that nothing else can give.

I don't know of any thing prettier for ribbon beds. It can be transplanted without the least injury after it is in bloom, so that you can be sure of having your colors just as you want them. There is not a prettier spot in my flower garden at this moment than the corner in which my Portulaca is growing. It is one solid mass of glowing crimson, with a broad band of white around it, and it

cost me in actual cash just five cents; to this might be added something like an hour of labor, which was good for me after six hours at my desk.

My first venture as a flower-grower was with *Portulaca*, and I tried it in the center of my mother's vegetable garden, when I was a boy. I made a mound about ten inches high, with an edge of sods, on this I made other and smaller mounds until I had a pyramid about five feet in height, the top mound being about a foot in diameter. In the center of this

I placed a thrifty *Feverfew*, and then I planted the rest of the entire mound with *Portulaca* seeds, and I think every one of them grew. By the middle of July that mound was the wonder of our little town. It could be seen from afar, looking precisely like a monstrous bouquet.

I have always succeeded best with the single varieties of *Portulaca*. They bloom more freely and last longer than the double varieties. But I wouldn't have a flower garden without a bit of *Portulaca*.
Z. D.

CUT FLOWERS.

The habit of over crowding a vase or dish with flowers is too common. It spoils the effect of many kinds, such as *Roses* and *Salpiglossis*, *Sweet Peas*, and the like.

There is a lady of my acquaintance, of exquisite taste, who makes so much of her flower bed during the summer as to surprise her neighbors. She has flowers all about the house, and supplies her neighbors and many sick chambers, but loveliest of all are her vases in the little church. They are never crowded, but look as though a fairy hand had placed them there.

I often wish a cheap, wide, urn-shaped vase would come more commonly into fashion. The little cramped vases now sold are trying to a real lover of flowers. The vases are so difficult to clean that

they seldom are thoroughly cleaned during a season.

There is nothing nicer for cut flowers than clean sand. It can be kept so sweet by a good thorough rinsing once a week, and then it is so helpful in the arrangement of most flowers. Take a ride or walk, some day, to the lake, and gather a small pailful for your summer flowers, and the trip will give you vigor and delight, and your pleasure in the use of the sand will be great. Trim off all leaves from the stems before you immerse them in the sand, as they decay very soon and spoil the fragrance. Sprays and trailing vines are a great addition to a vase if arranged to give a careless grace. Try your hand at a bouquet every day in summer, and you will soon have the artists' touch,
MRS. HOSKINS.



FOREIGN NOTES.

PLANTING OUT CALLAS.

There appear to be various opinions held as to the beneficial effects or otherwise of planting out Callas during the summer months. Having repeatedly tried both, I am averse to keeping Callas in pots, as not only are the plants considerably more trouble in watering, but they never make such strong crowns as they do with unlimited root room and a more regular supply of moisture. Objectors to the practice of planting them out aver that the plants suffer a great check in relifting and potting, but that depends on the way they are managed and treated; and if they do, that matters but little if the check is not too severe, as it does not affect their flowering, for with the strong, well developed crowns turned out plants are sure to have, the blooms must be there, and will issue forth in due time. The way to manage Callas is to turn out from their pots, and pull apart all those that are large, so as to reduce them to a desirable size. Before dividing them, however, it is advisable to have the ground ready, that there may be no delay in getting the plants in. It is a good plan to prepare a shallow trench, and manure it as is done for Celery. This gives every chance of affording the Callas plenty of moisture, as they may be flooded occasionally. The distance at which to place them in the trench depends on the size of the plants, but in a general way eighteen inches to two feet is ample; and after the planting is effected, it is a good plan to mulch, which will shade the ground and help to maintain a uniform condition of moisture. By the end of September the Callas should be lifted, and any loose soil shaken away from the roots, so as to reduce the ball to a size suitable for the pots the plants are to go into. The necessary filling in around should be done with fine rich mold, and to make sure of this not lying hollow, a heavy watering, which will carry the soil among the roots, where it will subside and be made use of at once, should be given. The best place for the plants immediately after potting is a

deep pit where they can be stood, kept close and shaded for a fortnight or so, during which time they ought to be frequently syringed overhead.

S. D., in *The Garden*,

PÆONIES ON GRASS.

The old-fashioned crimson and the newer shades of rose, pink and red varieties, especially of the double type, are grand objects when planted on the grass, where such accommodation can be given them. The green of the grass forms such a desirable contrast to their bright colors as to render the plants effective at a distance as well as under close inspection. If varieties are employed which are naturally of a strong erect habit, supports in the way of stakes will not be necessary nor desirable, as in such a position a too formal arrangement of the stems and blooms is not desirable, nor should such formality be encouraged. Fairly strong growing varieties will take care of themselves. M., in *Journal of Horticulture*.

WHITE LOBELIAS.

It is very odd indeed that, whilst blue Lobelias of both *speciosa* and *compacta* types, come very true from seed, it should be so difficult, if it be not impossible, to obtain white kinds from seed in any degree true. That blue varieties have become white doubtless arises from the enlargement of the white eye so materially that all blue tint is eliminated; still it is evident that this elimination is not permanent, for even among propagated plants of the best white forms there is an occasional tendency to revert to blue. However, that is not a material defect, as it is but temporary, whilst the white hue is the comparatively enduring one. Habits of plants are not affected by the sportiveness of the flowers, for we have *White Queen*, one of the very best well defined forms, very true to character. It is, however, in the matter of reproduction from seed which presents apparently insurmountable difficulties. I doubt whether we shall ever obtain a

white flowered Lobelia which will be entirely free from the blue taint. Let the white form be grown ever so remote from the blue one, no improvement in the purity of the progeny is effected. From white speciosa seed I get about twenty-five per cent. of white flowered seedlings, and of White Queen hardly fifteen per cent., so that it would never do to trust to seed as a means of perpetuating a true stock of these varieties. This percentage has been found the same for several years. The seed is itself white, or of a sandy white color, whilst the seed of the blue Lobelia is dark colored. It may well be expected that white seed would produce white flowered plants only, but I find plenty of deep blue forms to come from it.

A. D., in *The Garden*.

SOOT FOR CARNATIONS.

Having to deal with a poor soil, I have had both last season and this to resort to the use of soot to make the plants grow. When judiciously used it is a very good substitute for farmyard manure. Last summer I gave two applications of soot to my Carnations, and I did not find them too much. It increased the quantity of grass on weak growers considerably. All my stock, I should say, is grown in the open ground. This year I gave them a dressing about the middle of May. There is now every indication that they will not require any more assistance in the same direction, as the growth is thoroughly satisfactory, much more so than it was at the same time last season, although the treatment in other respects has been the same. The way I apply the soot is to sprinkle it on the surface over the roots of the plants and then pick up the soil with a pointed stick to mix it with the earth; a gentle watering is then given. The quantity I use is a tablespoonful in a space twelve inches over or thereabouts. From observation I am satisfied that soot is a useful stimulant to promote growth, but it must not be given in excess, or it will do more harm than good by forcing the grass into a long-jointed and weak condition. If there is already sufficient vigor in the grass, the use of soot is not desirable. I also find that in the choicer kinds of Carnations it causes the colors to run, and robs the flowers of some of that refined character for which they are so remarkable. J. C. C., in *The Garden*.

THE FRAXINELLA.

A communication to a late number of *The Garden*, by H. CORREVEON, of the University at Geneva, in regard to this plant is here given almost entire. The glandular hairs of this plant, and their secretion, have formed a study which has just been completed at the Laboratory of Vegetable Physiology of the University, and the results of this research are here set forth after the history, description and cultural directions:

The Fraxinella (*Dictamnus Fraxinella*, PERS.; *D. albus*, L.) belongs to the flora of Central Europe and of Siberia, and was introduced into our gardens about the end of the sixteenth century. It is classed in the natural family of the Rutaceæ, the plants of which are very resinous and highly odorous, and are natives of dry countries, occurring chiefly in southern latitudes. The other known species of *Dictamnus* are *D. angustifolius*, SCR., a Siberian plant, and *D. obtusifolius*, KOCH., a native of the Tyrol. Several forms and varieties of these species are also to be found in cultivation, but the Fraxinella, along with many other fine old hardy plants of our ancestors, has been banished from many gardens by the modern bedding-out system. Let us all hope that ere long it will be restored to them with all the honors which it deserves.

The Fraxinella is a strongly scented perennial plant, with rigid, erect growing stems from twenty inches to twenty-four inches in height. The leaves are of a glistening dark green color, and very much resemble those of the ash tree. The flowers are pinkish red or white, according to the species or variety, of large size, irregular in shape, and form a loose spike from six inches to eight inches in length. They commence to bloom in June, and are succeeded by large, very glandular, and fragrant capsules or seed-vessels. The plants should be grown in deep, friable soil and fully exposed to the sun. Care should be taken not to disturb them too often, otherwise they will not flower freely. The seed sometimes does not germinate for ten or twelve months after being sown.

The glandular hairs which abound on this plant secrete, especially at blooming time and on the upper part of the stems, a balsamic inflammable resin, which becomes volatilized in the air around the plant and takes fire when a light is applied to it. This phenomenon only occurs in warm, dry districts and at the close of a sunny day.

It is well known that certain plants, and very notably those of the Rutaceæ (*Aurantaceæ*) and Labiatæ families, secrete various products, such as essential oils, resins, gums, balsams, &c. Secretory organs which are buried in the substance of the parenchyma elaborate these products, while hairs of various forms and textures conduct them to the surface and there excrete them. The secretory organs are termed internal glands, and the excretory hairs are known as external glands. These latter glands are surrounded at the base by a part of the epidermis, which the hair has pushed up in issuing forth to make its appearance on the surface of the stem, and in the Fraxinella this raised part of the epidermis covers a gland which is very richly provided with resin and essential oil. When we examined this gland with a microscope on a hot day the gland was empty, its contents having been drawn out by the

heat through the cells of the epidermis or through the cells which form the hair that terminates the gland. It must be understood that the surrounding air has to be pretty strongly impregnated with the gas of the volatilized resin in order to take fire when a lighted match is applied to it.

This experiment has also been carried out in France by placing a pot plant of *Fraxinella* in bloom under a bell-glass and leaving it there for some time, when the air in the bell-glass was found to be so highly charged with the resinous gas that it ignited the moment a lighted match was applied to it, and, it may be added, without doing the slightest injury to the plant.

THE FLORISTS' TULIP.

The following is a portion of an article on this subject that lately appeared in *The Garden*, and which many of our readers will doubtless find interesting:

M. MENAGES tells us that the Tulip originally came from Turkey. M. GAMBLER, of Lisle, brought the first Tulip to Paris, now many years ago, and he probably obtained it from Vienna. It is supposed to have been first introduced to England about the time of Queen ELIZABETH. When it began to be cultivated as a florists' flower is, perhaps, not known. It would appear that the Tulip mania never reached England, though the growers of that day, no doubt, looked on with amazement at the course and results of the mania in Holland.

The breeder or self-colored stage is the seedling form of the Tulip. This is an extraordinary characteristic which, as a physiological fact, is scarcely known in any other flower. Whether seed be taken from feathered or from flamed flowers, they produce seedlings which, after five or six years' probation before they reach the blooming stage, will when they bloom, with very rare exceptions indeed, be simply self-colored flowers. Many of them are very beautiful, especially among the rose-colored breeders, that it seems a pity they should ever pass out of the self-colored into the broken character, and probably some never do. But the breeder stage is not the final one, though they may keep to it for three and four, up to nine or ten years. The raiser and cultivator of seedlings finds that, season after season, now one and now another, in no order of rank or age, will break or rectify either into feathered or flamed flowers, or some mixed attempt at either. One singular characteristic is that when the stage of breaking is reached the plants nearly always assume a less robust habit and a shorter stature, but they are not necessarily weakened in constitution, as BERCKMANN, who wrote of the Tulip many years ago, thought. The Rev. F. D. HORNER, in one of his pleasant papers on the Tulip, points out that—

"When the bulb is about to produce a rectified flower the foliage is less vigorous, and shows long before the bud colors a mottling and streaking with lighter green, which is observed in rectified Tulips, and these indications can be accepted as a certain sign that such a bulb, whether it flowers that year or not, has passed from the transient to the permanent stage of its existence. It is additionally strange that the breeder or mother color is not simply driven or collected into beautiful markings on the rectified petals, but that it disappears from the flower altogether as a mist or veil lifted off. The base or ground color floods the whole flower with its pure white or yellow, and a new and marvellous color strikes in to feather or flame the petals. Each bulb, when it rectifies, transmits its own character to its very offset."

It must not be supposed that the most beautiful

breeders—those possessing fine hues of color—produced the finest rectified flowers. The converse most often holds good, and the ugliest and least attractive flowers will produce the most valuable feathered or flamed varieties.

The broken Tulips are divided into three divisions—bizarres, byblœmens and Roses. The bizarre always has a yellow ground, and can thus be very readily distinguished; the two latter have white grounds, but they are readily distinguishable from each other by the practised eye. Roses break from white bases with pink, rose, red, or scarlet self-colored petals; byblœmens from a white base, with pale or deep or greyish lilac, mauve, slate-colored or purple petals. The broken flowers, whether bizarres, byblœmens, or roses, each form two distinct classes—one is termed feathered flowers, and the other flamed flowers. In the case of the former the coloring on the petal is laid on in beautiful styles of pencilling round the edge only, or this pencilling is joined by bold beams of color that rise like fire flashes up the petal center and strike into the pencilling of the edge with their sharp tongues.

The history of the Tulip is both eventful and strange, and for those who love and grow it, it has a remarkable fascination.

OLD CYCLAMEN BULBS.

One of the greatest mistakes that can be made in Cyclamen culture is that of withholding water as soon as the flowers fade. Rather than do this I would give the plants liquid manure, for the longer the foliage is kept in condition the better will the plants break again in autumn. Not only will they make stronger growth, but they will start much earlier if the foliage is allowed to die away naturally. On no account should the plants be turned out into the open air, for the change is apt to be too great, and if cold rains come the greater portion of the roots perish. Many people seem to think that the Cyclamen is like bulbous flowers generally, and that it is natural to it to lose the roots that have been made the preceding season; but this is entirely wrong, for the Cyclamen in its natural condition never becomes rootless, but keeps the greater portion of them, even when gone to rest. When Cyclamens are managed well they prepare themselves for another start when going to repose in a way unsuspected by many. They swell up the eyes on the corm much in the way that a vine plumps up its eyes or a Strawberry its crown in autumn. At the present time these little buds are plainly visible, and unless a Cyclamen forms these eyes now it will neither start so freely nor so early as it should do. I always keep my plants in a frame until it is time to repot them, giving plenty of water with a little liquid manure, shade from hot sun, and every now and then they are well syringed, not merely overhead, but in a way that well washes the under sides of the leaves. This I do to keep off the red spider, which otherwise is sure to fasten on them. Plenty of moisture at the roots and food will, however, help to keep this off. I am sure that any one who may treat their old corms in this way will not fail to recognize the advantages of it. I believe that nine-tenths of the failures that attend the culture of old bulbs are attributable to neglect after blooming. I have known Cyclamens do remarkably well in a window year after year simply because the owner kept them in doors and watered. Every grower knows how difficult it is to get a plant into full growth when once it has become too dry, and it is just the same with a Cyclamen corm.

J. C. B., in *The Garden*.

The fruit crop of all kinds will be light this season in England, and the prospect is that Apple shippers in this country, who send their fruit across the water, will be able to get a good price for it.

SEWAGE AND MANURE.

The present wasteful and filthy system of the disposition of the sewage of cities and large villages, by running it into the streams and lakes, thus polluting all the beautiful waters of the country, will not be tolerated much longer. In some way the waste and excreta of the population must be returned to the soil. Here is an account from the *Journal of Horticulture*, of the manner in which it is made into guano, at Kingston, England:

"The method of converting raw sewage into an odorless fertilizer is ingenious and highly interesting. In the first place, after passing through a grating, it flows into a pump well beneath the main building, and the deodorizing mixture is there applied. Centrifugal pumps lift and discharge it into a meter chamber, whence it flows into open channels in the grounds, precipitating agents being applied on the way. These channels conduct it to the settling tanks, which are eight in number. They are eighty-five feet long by fifty feet wide, and about eight feet deep, and have a holding capacity of 1,200,000 gallons. The tanks are arranged in pairs, with a dividing wall, which does not, however, extend to the further extremity, but leaves an opening several feet long. Flowing from the channels above referred to into the first tank, the sewage passes through it, settling as it goes, and passes around the end of the wall into the second tank, where further settling takes place, and the surface water flows out through a floating apparatus and escapes into a channel lower down, whence it passes through a covered channel to the river. This effluent is quite clear and odorless.

The deposit left after the surface liquid has escaped is pumped from the tanks into what is known as the sludge well, where further applications are made to it, and from there it is transferred to an upper floor of the main building, and forced by air pressure into filter presses, which press the remaining moisture from it. Removed from the presses it is thrown into a heap to dry, and then passed through a cylinder into a disintegrator, where it is powdered and passes out ready for use.

When placed in sacks ready for being dispatched for use on farms and gardens the native guano resembles soot, hence

is in a form that renders it easily and conveniently applicable to the soil. Many good gardeners speak highly of it, and it is essentially a safe fertilizer for farm and garden crops generally, also for lawns and flower gardens. The process by which the Native Guano Company evolve it from town sewage is entirely inoffensive; in fact, while the works were in full operation on Saturday last, which was a very hot day, no inconvenience was experienced by the visitors who inspected them, much less by the inhabitants of the adjoining town of Kingston. Here, then, the sewage question is solved in a practical manner, with safety to the public and advantage to the soil. It ought to be considered elsewhere, for millions of pounds are wasted when the greater portion of the sewage of a nation is consigned to the sea.

SHIRLEY POPPIES.

A writer in the *Gardeners' Chronicle* says: Of all the Poppy tribe the Shirley strain gives us the loveliest of colors, combined with perfect form, and the most remarkable infloriferousness. To have the plants at their best, and flowers in finest form, seed should be sown quite early in September, so that the plants may be dibbled out singly some fifteen to eighteen inches apart. I have plants now blooming which are thirty inches in height and as much through, and that, too, in rather poor soil. As to colors, I have never seen lovelier. They are shades of indescribable hues, so exquisitely refined and pleasing that even a *blasé* florist like myself can get into a state of enthusiasm over them. So great is the admiration expressed for these flowers that I anticipate for them a long lease of popularity. We hardly know yet how much of beauty there may be lying in this strain. I fear it would be difficult to do so, because of the wealth of pollen found in the flowers; but if it was possible to isolate and save seed true to color of the whites, the edged roses, the self roses, and pinks, the scarlets, and crimsons, how lovely would masses of them prove to be.

T. R., in *Jour. of Horticulture*, says, the only satisfactory crops are Strawberries, Gooseberries, Raspberries, White and Red Currants.

PLEASANT GOSSIP.

CUT-WORMS.

An article on this subject, by JAMES FLETCHER, of Ottawa, appeared in a late number of the *Canadian Entomologist*, which is worthy of a wide distribution, and it is here reproduced entire, with the engravings which illustrated it:

Of all the injuries committed year after year upon field and garden crops, none are more annoying than those due to the ravages of the various caterpillars known as cut-worms. These are the larvæ of dull-colored, active moths, belonging for the most part to the three genera, *Agrotis*, *Hadena* and *Mamestra*, and in North America alone constitute an army of no less than three hundred and forty different described species, many of which are, at times, very

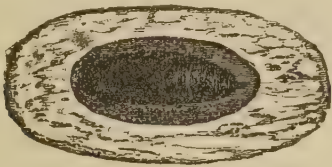


FIG. 1—COCOON.

numerous. They may be described, in a general way, as smooth, almost naked, greasy-looking caterpillars, of some dull shade of color similar to the ground in which they hide during the day. The head is smooth and shining, and sometimes of a different color from the rest of the body. On the segment next to the head is a smooth plate, known as the thoracic shield, and there are three or four series of bristle-bearing tubercles along the sides. Their habits are nocturnal, that is, they feed at night and lie hid during the daytime. The habits of most cut-worms are as follows:

The eggs are laid in spring, summer or autumn, and the insects pass the winter either in the perfect moth state, as a half-grown caterpillar, or as a chrysalis. Those which hibernate as moths, lay eggs in the spring and moths are produced in the autumn. The eggs which are laid in summer and autumn hatch soon after, and the caterpillars either become full fed the same season and pass the winter under ground in the chrysalis state, or, after feeding for a short time, become torpid, and so pass the winter beneath stones, heaps of dead vegetation, or in cells beneath the surface of the ground. The injury done by the young caterpillars in the summer and autumn is seldom noticed at those seasons, on account of the abundant vegetation; but, in the spring, not only are the caterpillars larger and capable of more mischief, but the land is cleared of all vegetation other than the crop which is to be grown. They are then particularly troublesome in gardens, cutting off young Cabbages, Tomatoes, and other plants as soon as they are pricked out. When full fed, these caterpillars burrow into the ground to a depth of some inches and turn to brown chrysalids inside a smooth cell or a light cocoon, Fig. 1. From these, after a few weeks, the perfect moths emerge. They

are very active at night, and, when disturbed, have a habit of dropping to the ground and remaining perfectly still as if dead, where, from their dull colors they are difficult to detect. When at rest, their wings lie horizontally over their backs, and the upper ones entirely cover the lower pair. The upper wings are generally crossed with one or more waved lines; and always bear two characteristic marks—one about half way down the wing, orbicular in shape; the other, near the tip, reniform or kidney-shaped.

Fig. 2 shows "The Gothic Dart Moth," *Agrotis subgothica*, HAW., with wings closed and expanded; this is a very common and injurious species, the caterpillar of which is too well known as the "Dingy Cut-worm."

Cut-worms may be divided into three classes, according to their habits, and remedies must be applied in a slightly different manner for each. These classes are,

1. Climbing Cut-worms, or those which climb trees and destroy the buds.
2. Surface Cut-worms, or those which live on the surface of the ground and cut off herbaceous plants just beneath the surface of the soil.
3. Those which combine both of these habits.

Of the first class, a good representative is the Climbing Cutworm, *Agrotis scandens*, RILEY. The Dingy Cut-worm, the caterpillar of the Gothic Dart Moth, Fig. 2, belongs to the second class, and the "Variegated Cut-worm," *Agrotis saucia*, TREIT., and the "Yellow-headed Cut-worm," which turns to the "Amputating Brocade Moth," *Hadena arctica*, BOIS, Fig. 3, are good representatives of the third class.

Remedies.—There are several remedies which may be used for Cut-worms. For the climbing



FIG. 2—GOTHIC DART MOTH.

kinds, the best remedy is to place round the stem of the tree or bush to be protected, a strip of tin four inches wide, the lower edge can be pressed into the ground, and the tubular shape is easily preserved by securing it above with a piece of twine. This will effectually keep all Cut-worms from the tree, for these heavy-bodied caterpillars are unable to crawl over the smooth surface. A similar expedient is to tie a band of cotton batting around the stem, as the caterpillar cannot crawl over this yielding material.

For Surface Cut-worms the most efficient remedies are the following:

1. Keeping down all weeds in late summer and au-

tumn, so as to deprive those species which hatch in the autumn of their food supply and winter shelter.

2. Burning off all the stubble and rubbish as late as possible in spring, when many caterpillars and the eggs of some species will be destroyed.

3. Placing some substance with an obnoxious odor around young plants when first set out, as fresh gas-lime, or sand or sawdust saturated with coal oil or carbolic acid.

4. Wrapping. Young plants may be protected in



FIG. 3—AMPUTATING BROCADE MOTH.

a large measure by simply wrapping a piece of paper around the stems at the time of planting.

5. Tomato cans with the tops and bottoms cut out, placed over the young plants, or strips of tin, as suggested for Climbing Cut-worms, will be found to well repay the trouble and expense of procuring them.

6. Kerosene emulsions. Where these caterpillars occur in very large numbers, spraying infested beds with a kerosene emulsion at night has been found very beneficial.

7. Traps. Placing bundles of leaves or grass, poisoned with Paris green, between the rows of infested beds has been found a useful means of destroying large numbers of these pests.



FIG. 4—FIERY GROUND BEETLE.

8. Hand picking. When a plant is seen to have been eaten off, of course, the cut-worm should always be looked for and destroyed. They will generally be found close to the root and about an inch beneath the surface.

In addition to the above artificial remedies, nature has provided the farmer with many useful and active assistants in the shape of various predaceous insects. Conspicuous among these are the ground beetles, which should be known by sight by every one, so that they may be protected, and not, as is too often the case, destroyed *because they are insects*. At Fig. 4 is shown the "Fiery Ground Beetle," *Calosoma calidum*, FAB., a common and very useful species. Its color is deep black with red, or sometimes green, glowing spots. The grub has been styled the "Cut-worm Lion," on account of its useful habit of destroying these pests.

ASSOCIATION OF NURSERYMEN.

Advance sheets of the report of the Nurserymen's Convention held in Chicago, in June, have been received, and our thanks are due to the Secretary, CHARLES A. GREEN, for the same. Among the valuable papers read at the meeting we select two which appear to

be of greatest general interest, and republish them at this time. On the subjects treated there are no better authorities than the writers of these papers.

SUCCESSION OF FOREST GROWTHS.

It is the prevailing and almost universal belief that when native forests are destroyed they will be replaced by other kinds, for the simple reason that the soil has been impoverished of the constituents required for the growth of that particular tree, or trees.

This I believe to be one of the fallacies handed down from past ages, taken for granted, and never questioned.

Nowhere does the English Oak grow better than where it grew when WILLIAM the Conqueror found it, at the time he invaded Britain.

Where do we find White Pines growing better than in parts of New England, where this tree has grown from time immemorial?

Where can you find young Redwoods growing more thriftily than among their giant ancestors, nearly or quite as old as the Christian era?

Then one may ask the question, why have any succession of forest growths? I simply answer, because you cannot make something out of nothing.

Wherever we see a forest tree growing, there, our common sense teaches us, that a seed has been deposited from which this tree has grown.

When a Pine forest is burned, both trees and seeds have been destroyed, and as the burned trees can not sprout from the stump, like Oaks and many other trees, the land is left in a condition well suited for the germination of tree seeds, but there are no seeds to germinate. It is an open field for pioneers to enter, and the seeds which arrive there first have the right of possession.

The Aspen Poplar, *Populus tremuloides*, has the advantage over all other trees. It is a native of all our northern forests from the Atlantic to the Pacific. Even fires cannot eradicate it, as it grows in moist as well as dry places, and sprouts from any part of the root. It is a short lived tree, consequently it seeds when quite young; seeds abundantly; the seeds are light, almost infinitesimal, and are carried on wings of down. It ripens its seeds in spring; they are carried to great distances, and at the very time when the ground is in the best condition. Even on the dry mountain sides in Colorado, the snows are just melting, keeping the ground moist.

The seeds of this tree would require the greatest skill of the nurseryman, and very doubtful if he would succeed at all. The burnt land is its paradise; wherever you see this tree on high, dry land, you may rest assured that a fire has been there. On land slides you will not find its seeds germinating, although they have been deposited there equally with the burned land.

Next to the Aspens and Poplars comes the Canoe Birch, and further north the Yellow Birch, and such kinds as can have the seeds deposited.

I have seen Acorns and nuts germinating in clusters on burned lands, in a few instances they had evidently been buried there by animals, and had escaped the fires.

I have seen the Red Cherry, *Prunus Pennsylvanica*, coming up in great quantities, which might never have germinated had not the fire destroyed the debris which covered them too deeply.

A careful examination around the margin of a burned forest will show trees of the surrounding kinds working in again, thus by the time the short lived Aspens (and they are very short lived on high land)

have made a covering on the burnt land, the surrounding kinds will be found re-established on the new forest—the seeds of the Conifers carried in by the winds, nuts and Acorns by the squirrels, the berries by the birds—the mixture varying more or less from the kinds which grew there before the fire.

It is an easy matter to find out the number of years since the fire by counting the annual growths on the scarred trees around the margin of the burnt district. A fire of twenty years ago will show plainly on the Pines and many other kinds.

It is wonderful to notice how far seeds of berries are carried by the birds. The Wax Wings and Cedar Birds carry seeds of our Tartarian Honey-suckles, purple Barberries, and many other kinds four miles distant, where we see them springing up near the lake shore, where these birds fly in flocks to feed on the Juniper berries. It seems to be the same everywhere. I found European Mountain Ash trees, last summer, in a forest in New Hampshire, the seeds of which must have been carried two miles as the crow flies.

While this alternation is going on in the east, and may have been going on for thousands of years, the Rocky Mountain district is not so fortunate.

When a forest is burned down in that dry region, it is doubtful if coniferous trees will ever grow again, except in some localities specially favored. I have seen localities where the short lived trees were dying out, and no others taking their places.

Such spots will hereafter take their places above the "timber line," which seems to me to be a line governed by circumstances more than altitude or quality of soil.

There are a few exceptions where Pines will succeed Pines in a burned down forest. *Pinus Murrayana* grows up near the "timber line" in the Rocky Mountains. This tree has persistent cones which adhere to the trees for many years. I have counted sixteen year cones on one of these trees, and examined burned down forests of this species. Many of the cones had apparently been imbedded in the earth as the trees fell, the heat had opened the cones, the seedlings were growing up in myriads, but not a Conifer of any other kind could be seen as far as the fire had reached.

In the Michigan Peninsula, Northern Wisconsin and Minnesota, *Pinus Banksiana*, a comparatively worthless tree, is replacing the valuable Red Pine, *Pinus resinosa*, and in the Sierras *Pinus contorta* and *Pinus tuberculata* are replacing the more valuable species by the same process.

In these cases also the worthless trees are the shortest lived, so we see that nature is doing all she can to remedy the evil.

Man only is reckless, and especially the American man.

The Mexican will cut large limbs off from his trees for fuel, but spare the tree. Even the poor Indian, when at the starvation point, stripping the bark from the heavy-wooded Pines, *Pinus ponderosa*, for the mucilageous matter being formed into sap-wood, will never take a strip wider than one-third the circumference of the tree, so that its growth shall not be injured.

Frequently we see articles in print, stating that Oaks are springing up in destroyed forests, where Oaks had never grown before. The writers are, no doubt, sincere, but they are careless. The only Pine forests where Oaks are not intermixed, are either on land so sandy that Oaks cannot be made to grow on them at all, or so far north that they are beyond the northern limit.

In the Green Mountains and the New England forests, in the Pine forests of Pennsylvania, in the Adirondacks, in Wisconsin and Michigan, except in sand, I have found Oaks mixed with the Pines and Spruces.

In northwestern Minnesota, and in northern Dakota, the Oaks are near their northern limit, but even there the Burr Oak drags on an existence among the Pines and White Spruces.

In the Black Hills, in Dakota, poor, forlorn, scrubby Oaks are scattered through the hills among the heavy wooded Pines. In Colorado we find them as shrubs among the Pines and Douglas Spruces. In New Mexico we find them scattered among the Pinons. In Arizona you will find them growing like Hazel bushes among the heavy wooded Pines. On the Sierra Nevadas the Oak region crosses the Pine region, and scattering Oaks reach far up into the mountains. Yet Oaks will not flourish between the one hundredth meridian and the eastern base of the Sierras, owing to the aridity of the climate. Recently we found Oaks scattered through among the Redwoods on both sides of the coast range mountains. DARWIN has truly said, "the Oaks are driving the Pines to the sands."

Wherever the Oak is established, and we have seen that it is established, wherever it can endure the soil and climate, it will remain there and keep on advancing.

The Oak produces comparatively few seeds; where it produces a hundred seeds the Ash and Maple will yield a thousand, the Elm ten thousand, and many others a hundred thousand. The Acorn has no provision made by nature, like other seeds. Many kinds have wings to float them on the water and carry them in the air, the wings placed in such a manner as to be carried by a rotary motion, reaching a wonderful distance even in a very light wind.

Nearly every tree seed, except the Acorn, has a case to protect it while growing, either opening and casting the seeds off to a distance when ripe, or falling with them to protect them till they begin to germinate. Even the equally large seeds of other kinds are protected in some way.

The Hickory nut has a hard shell, which shell itself is protected by a hard covering until ripe.

The Black Walnut has both a hard shell and a fleshy covering. The Acorn is the only seed I can think of which is left by nature to take care of itself.

It matures without protection, falls heavily and helplessly to the ground, to be eaten and trodden on by animals, yet the few which escape and those which are trodden under are well able to compete in the race for life.

While the Elm and Maple seeds are drying upon the surface, the Hickories and Walnuts waiting to be cracked, the Acorn is at work with its coat off. It drives its tap-root into the earth in spite of grass, and brush and litter. No matter if it is shaded by the forest trees so that the sun cannot penetrate, it will manage to make a short stem and a few leaves the first season, enough to keep life in the root, which will continue to drill in deeper and deeper.

When age or accident removes the tree which has overshadowed it, then it will assert itself. Fires may run over the land, destroying almost everything else, the Oak will be killed to the ground, but it will throw up a new shoot the next spring, and when the opportunity arrives it will make a vigorous growth in proportion to the strength of the root, and throw out strong side roots, and after that care no more for its tap-root, which has been its only support, than a

frog cares for the tail of the tadpole after it has got on its own legs.

There is no mystery about the succession of forest growths. Nothing in nature is more plain and simple.

We cannot but admire her wisdom, economy and justness, compensating in another direction for any disadvantage a species may have to labor under.

Every kind of tree has an interesting history in itself.

Seeds with a hard shell, or with a pulpy or resinous covering retarding their germination, is often the means of saving them from becoming extinct.

The Red Cedar, *Juniperus Virginiana*, reaching from Florida to and beyond Cape Cod, among the hills of Tennessee, through the Middle States and New England, scattered through the Western States and Territories at long distances apart, is creeping up the Platte River in Nebraska. I found only three in the Black Hills, in Dakota, in an extended search for the different trees which grew there. Found only one in a long ramble in the hills at Las Vegas, New Mexico. Yet this tree has crept across the continent, and is found here and there in a north-westerly direction, between the Platte River and the Pacific coast.

Only for the resinous coating protecting those seeds, this tree would be found to-day scattered over that immense region.

ROBERT DOUGLAS.

NEW GRAPES.

I am asked to say a few words to you upon New Grapes—a subject which has engaged my attention for many years, and one which I believe has some attraction for every one. For who is there that does not feel a glow of pleasure at the thought of graceful vines laden with their wealth of purple, golden, or rosy clusters, climbing upon the walls or twining upon the trellis in garden or vineyard, with rich promise of luscious fruitage to delight the palate, or yield their generous juices to make glad the heart of man, as they have through the long ages of the past?

But I must not dwell upon these thoughts and reflections, however alluring they may be, but approach the subject in a practical and business way, as a question of profit rather than of sentiment.

Of the large number of Grapes which have been originated within the past thirty years comparatively few have become generally popular or valuable; and it is doubtless true, that from the long and attractive lists of our catalogues many might be rejected without serious loss or inconvenience. This will eventually come, through the introduction of new and better kinds; but for many reasons it is a slow and somewhat difficult matter. So many varieties have been brought forward with extravagant and extraordinary claims which have not been sustained, the careful and practical Grape-grower views with many grains of doubt, if not of suspicion, the new Grape which is offered, as "earlier than the Hartford; as healthy and hardy as the Concord; better than the Delaware; and whose fruit never rots, and foliage never mildews." By claiming too much, introducers of new Grapes have often misled and disappointed a generous, and, perhaps, too confiding public.

We have been striving, and hoping, and expecting to obtain the perfect Grape, with all the excellencies, and at the same time suited to all localities. We have not found it, and we probably never shall. But we have varieties, that with intelligent care succeed admirably in particular localities, and are grown with both pleasure and profit to their owners. The

same varieties in situations unsuited to their special characteristics would only result in failure and disappointment.

When the fact is fully understood and acted upon, that varieties must be selected with reference to climate, soil and location, disappointment will be less, and success more certain.

We have now, also, reason to believe that by the intelligent use of the new remedies which have proven so successful both in this country and in Europe, the area of successful Grape culture will be greatly enlarged; and that many of the finer varieties may be profitably grown in localities from which they have hitherto been excluded on account of their liability to mildew and rot in unfavorable seasons.

The number of new Grapes of more or less promise which have been introduced within a few years past, has been so large that I cannot, within the limits of this paper, do more than notice a few of those most prominent, and which seem most promising for permanent value. The points to be determined as to a new Grape should be, "Do we need it? And is it, in any important respect, better than those we have already?" Unless these questions can be affirmatively answered, I should say there is no place for it, and no propriety in adding it to a list already too long, of varieties whose usefulness is certainly very limited, if not altogether doubtful.

The Niagara Grape is comparatively new; and although it has not been found adapted to very general cultivation, is still one of the most profitable and valuable for such localities as are suited to its requirements. It has not proven as early, nor as hardy as represented by its introducers; neither has it been more exempt from mildew of foliage or rot of its fruit than the average. But its vigorous growth and abundant bearing, with quality and appearance good enough to satisfy the mass of buyers and consumers, render it one of the new Grapes worthy to be retained and recommended, wherever it can be successfully grown.

The Empire State is a formidable competitor for public favor with the Niagara. It is about equal to it in vigor of growth, probably little, if any, hardier in severe winters, but within my experience has better foliage, much less disposed to mildew. In productiveness, usually somewhat less than the Niagara, but, to my taste, in quality greatly its superior.

Moore's Diamond is a still later introduction of which I speak from a limited experience; but with the hope of bringing out information from those who have grown it longer. With me it appears no hardier nor healthier in vine or foliage than the Empire State. About the same in vigor of growth, but not as productive, with bunches and berries somewhat smaller. In quality distinct and pure flavored, but not better.

Another new white Grape of the Labrusca class, as yet but little known, originated at Columbus, Ohio, and named "Witt," after its originator, by the Ohio State Horticultural Society, has the merit of hardiness and health of foliage, and is fairly productive of handsome clusters of good size and fine quality. It is doubtless a Concord seedling, and resembles the Martha in foliage and habit of growth, but its bunches and berries are much larger and its quality and flavor much better.

The Woodruff Red has many good points to commend it, although there are differences of opinion as to its character and value. It originated near Ann Arbor, Michigan, and is claimed to be a Concord seedling. It seems to have all the vigorous growth.

health and hardness of its reputed parent; and to have all the requisites for a popular and valuable Grape, as nearly suited to general cultivation as any variety, new or old, yet introduced. It bears abundantly, producing berries and clusters of the largest size, bright and attractive in color, and ripening with, or a little earlier than, the Concord. It is, however, a variety pronounced in character, and distinct in flavor, a pleasant mixture of sweet and vinous acid, with also somewhat of the "native aroma" called foxiness, which to the many, when not in excess, is an added charm, and to the few an "unpleasantness." As many as nineteen in twenty who have eaten this Grape in my presence have called it excellent, and some have even pronounced it as good, or better than the Delaware. I cannot agree with this latter opinion, but I have long ago ceased to dispute or quarrel about matters of individual taste; yet I do think the Woodruff has more of the characteristics of a popular and valuable variety for general planting for market and for profit than any other red Grape within my knowledge. I would, therefore, plant it for the nineteen who are satisfied with and like it, and let the twentieth look out for something else.

The Eaton is another new Grape, black in color, and I believe is called a Concord seedling. It somewhat resembles the Woodruff in vigorous growth and healthy foliage; as to comparative hardness and period of ripening I cannot say. As I have seen and tested it on several occasions, it has less of sweetness and also of the "native aroma;" its juice being rather thin and acid. It is, however, large both in bunch and berry, quite showy and attractive in appearance, and perhaps good enough to be popular and profitable for market and general use.

A black Grape of entirely different character is the Jewel, originated by JOHN BURR, of Leavenworth, Kansas, which has been highly commended in some sections. The vine is of the *Labrusca* character, hardy in winter, with healthy foliage, in general habit much like the Early Victor. It ripens very early—at Delaware, from the middle to the last of August, according to the season, a little before Moore's Early. The vine is very productive; berries and clusters only medium, about the size of the Delaware, or a little larger; skin thin, but tenacious, will carry well. Flavor pleasant and sprightly, not foxy. It has small seeds, and though a little pulpy is not acid or coarse at the center. Its rather small size and only moderate growth are its only faults; and though to my taste not as some have claimed, as good as Delaware, it is the best in quality of any very early ripening black Grape that I have seen.

The Moyer is a new Grape from Canada, that I mention for the purpose of having its merits discussed. As I have grown it, it is not as vigorous as the Delaware, though the foliage appears rather thicker, and better able to resist mildew. I fear the size of the clusters are smaller than Delaware, and its claim for extreme earliness seems to be its prominent recommendation.

Another red Grape of something the same character, not yet introduced to the public, seems promising. Specimens were sent me from Indiana last season. Others were brought to the winter meeting of the Ohio State Horticultural Society, last December, by the Editor of the *Indiana Farmer*, and were found of excellent quality and remarkable for long keeping. A vine sent me for trial shows vigorous growth, with very large, thick and heavy *Labrusca*-like foliage. The Grape resembles Delaware with

somewhat larger berries and clusters, and deeper color. It is rich and pure flavored, without foxiness, and pronounced very good by all who tasted it. It was named by its originator, Mary's Favorite. I am not informed whether it is to be propagated and offered for sale; but it appears to have merit above many Grapes that are now on our lists.

The Downing Grape, which was originated by Mr. RICKETTS some years ago, has been lately introduced by Mr. BURROW, of Fishkill, N. Y. Although it is said to have been successful in some places in New York, I have found it unusually subject to mildew of the foliage, and entirely unsuited to open culture in my locality.

The Mills Grape, the past season, failed to ripen its wood, by reason of mildewed foliage, which fell prematurely, and I should class it with the Downing, as only desirable for amateur culture in specially favored situations.

The Ulster Prolific, originated by the late A. J. CAYWOOD, has some claims for consideration, and will probably be found useful in many localities, for its hardness and productiveness, with good quality of fruit and healthy foliage. The vine is of moderate growth, berries and clusters medium, color rather dark brownish red.

The Nectar, which was first called Black Delaware, by the same originator, is offered for sale, but I can only report vigorous growth and healthy foliage.

I may also mention Francis B. Hayes, by the originator of Moore's Early. The vine is healthy, and of the Concord character, in growth much like Martha, and also in size and appearance of its fruit, but ripening early, less foxy, and better in quality, I do not think it as good, however, or as promising for general use as the Witt Grape, or the Colerain, another white Concord seedling of similar character, which originated in Belmont County, State of Ohio.

I have, perhaps, pursued this subject as far as it is either desirable or profitable at this time; but contrary to the opinions I have seen recently expressed, I think that even our best and most popular Grapes need improvement.

We need a Grape having all the general characteristics of the Concord or the Worden, with a more tenacious skin, which will bear handling and shipping with less injury, with also better quality and better keeping qualities.

We need also a Delaware, with more vigorous growth, larger fruit and healthier foliage. Or if we could have a Grape like the Delaware, borne upon a vine having the character of the Concord for health of foliage and adaptability to different soils and locations, every Grape grower would at once recognize its immense importance.

All these and even more can be, and I am sure will be, produced through the agency of judicious and skillful crossing and hybridizing. Such improvements are necessarily slow; and as experience has shown, the encouragement to the conscientious grower and originator of new Grapes is not large, but the work will still go on, and improvements will be sure, though it may not be rapid, and out of the many that we now have and more that will surely come in the future, selections will doubtless be made that will be adapted to all sections where Grapes can be grown, and no place within this limit need be without successful cultivators of this delightful fruit so conducive to the comfort, the health, and the happiness of mankind.

GEORGE W. CAMPBELL.

THE GOLDEN-ROD.

From the flying train, behold,
 Ever changing fields of gold,
 Sunny slopes in luster laid,
 And old gold the hills in shade;
 Golden, golden! Wave the plume,
 Freedom's fallows give the room;
 Unsubdued by wit of man,
 Symbol flower, American.

Like a bit of sky at night,
 Full of constellation light,
 Comes the vision of thy plume
 Bending o'er with starry bloom,
 Sunshine, dew and burnished gold,
 Each declare the story old,
 How in endless chain of thought
 Wisdom unto wonder wrought.

Symbol flow'r American,
 Underneath I see thy plan—
 Brotherhood of stems that run
 Closer till they meet in one.
 Type of higher federation—
 States unite, and lo, a nation!
 To the world the lesson give,
 How to govern, how to live.

Rich the bounty, here we see,
 To a people ever free;
 Plenty flows as beauty beams
 In a thousand golden streams.
 To a nation Golden-Rod
 Lifts its head above the sod,
 Love and justice to propose,
 Gold for friends, the rod for foes.

HENRY REEVES, PH.D.

WINTERING RHODODENDRONS.

If we can keep Rhododendrons here in Maine, through our long, severe winters in the open, it would seem as though J. ELSTON, who wrote in the last number, ought to be able to do so in New York state. I have had two plants of Rhododendron for about twelve years, and they have never been injured at all by the cold. Their bright evergreen foliage is quite an attraction amid the snow. How beautiful they are in leaf and flower. One cluster makes a big bouquet.

M. D. W.

[The snowfall of Western New York is much lighter than that of Maine, hence it is harder to winter, in this locality, Roses, Rhododendrons and other low shrubs requiring protection, than in the higher latitude of Maine.—Ed.]

THE FLORISTS' MEETING.

Our readers are again reminded of the meeting of the Society of American Florists, to be held in Buffalo on the 20th, 21st and 22d of the present month. There is every reason to expect a very large gathering, and a pleasant and profitable session. Go and get acquainted with your fellow-workers.

FORCING LILIES.

Hardy bulbs are potted each fall for forcing in the window-garden, and they are a grand addition. Amateurs generally have success with Hyacinths, Narcissus and Tulips; but Lilies will grow thriftily and run up a stalk, and keep one in a fever of excitement to see the buds appear, and then sometimes come blind. Now this is not pleasant to amateurs who have only two or three Lily bulbs in pots. In the fall of 1887 a lot of *Candidum* and *Longiflorum* were potted in the greenhouse, and in due time all began to grow and put up stalks as if to bloom, but not one did. So I let them alone, did not repot them, or do anything to them the following fall, and last winter or early this spring every bulb that was large enough to bloom was full of flowers. These Lilies were potted in soil composed of equal parts of sand, rotted manure, and rotted sod. Lilies in-doors must have good light and ventilation, and not suffer for water. G. B. D.

BE GENEROUS.

My neighbors have a pleasant way of sending little bouquets to each other, and I don't know of a more graceful way of expressing kindness and good will. I have as many flowers as any of them, but when my door-bell rang the other morning, and I went to the door, I found there the little girl of my neighbor across the street, who had sent me a bouquet of Sweet Peas with the dew still on them. Now, my Sweet Peas were a failure this year, and my neighbor knew it, and I was suddenly reminded of the fact that my *Nasturtiums* were a good deal finer than my neighbor's, so, of course, I sent her a bouquet of them. You are almost certain to have flowers that your neighbors have not, and they will not fail to appreciate your kindness in remembering them, no matter how many flowers they may have. My neighbor to the right sent me the very first spike of *Gladiolus* that bloomed for her, when she knew that I would have some of my own in a few days. Be generous with your flowers; they can be made to preserve the peace and harmony of a neighborhood, for I don't believe that neighbors who send flowers to each other can back-bite or gossip about one another, or "spat" over back fences. Z. D.

FERNS ON THE PRAIRIE.

I promised to write you what success I have with growing hardy ferns on the prairie. Well, it is a success. I live two miles from the woods, and I will tell you how I made the bed and planted it. The bed is sixteen feet long and three feet wide on the north side of the house. I first removed one foot of soil, and filled it with rotten chips from an old wood pile; also a little sand and rotten leaves, working in a portion of the soil with it. Then I made a trip to the woods and gathered the Ferns, and planted them carefully, and watered them in the dry season. This was the first planting, and since that time, when I have found a nice plant on my travels, I have dug it up and tied the roots in anything handy and taken it home, and planted it, and I have rarely lost one, though transplanting any time during the summer. As to varieties, I have *Struthiopteris Germanica*, *Onoclea sensibilis*, *Pteris Aquilina*, *Adiantum pedatum*, and *Cystopteris fragilis*. *Adiantum pedatum* is placed near the wall. I have not observed any form in planting, but rather imitated nature as nearly as possible, except I have a border of *Hepatica*, or Liverleaf, which does nicely also. While the Ferns may not grow as large as they do in their native home, they will make nice, stocky plants. In the fall I cover about four inches thick with any straw that is free from foul seeds, or leaves if I have them handy, to be removed in the spring.

I have another bed in the north-east angle of the house, shaded by a climbing Rose, standing a little distance away. This bed is planted with *Onoclea sensibilis* and *Aspidium spinulosum*; the fronds of the last named to-day stand three feet high, and are sixteen inches wide, and are as fine plants as I ever saw anywhere. This bed is bordered with *Aspidium acrostichoides*. This bed is fit to grace a palatial residence.

You remember of my sending you a Maiden Hair, *Adiantum Capillus-veneris*, which I found in Dakota; you expressed doubts as to my being able to raise it out of doors here; well, at this writing, it is making a good growth, as good as could be expected, as I sent it home by mail in August, and it was planted; then, when I arrived home in September, it was again transplanted, and is doing as

well as *Pellaea atropurpurea*, and *Cheilanthes gracillima*, which were obtained at the same time and similarly treated. You say that this Maiden Hair is not hardy, yet all the covering it received was four inches of dry leaves. It did not start into growth until June, but is doing well now. If no preventing Providence, I will let you know how it comes out next year.

L. E. D., Grundy Co., Ill.

FINE PASSION FLOWER.

Eynsford Gem is a Passion Flower originated but a few years since, and within a short time introduced into trade. It is a hybrid variety, being a cross between *Constance Elliott* and *P. racemosa*. The plant is a rapid grower, and the flowers are produced in great numbers. It does not require a high heat, being well suited with a greenhouse temperature, and many a clever plant-grower will, no doubt, bloom it in the window. The colored plate gives a better idea of its beautiful appearance than a description can. We can recommend this Passion Flower as an excellent and satisfactory variety, of easy cultivation.

THE GOLDEN ROD.

A contributor to the July number of this MAGAZINE expresses surprise at finding the Golden Rod mentioned as being found in Siberia, and seeks "to know its true limit." With nearly a hundred species, North America is truly the home of the *Solidago*; but there are several species in the Old World—certainly four in Europe. Our term "Golden Rod" is simply a translation of *Verge d'Or*, and *Goldruthe*, the French and German popular names. I remember the thrill I experienced when crossing the mountains of Ireland on the top of a coach, at seeing, side by side, a fine specimen each of the Foxglove, *Digitalis purpurea*, and *Solidago virgo-aurea*, the only native species of Golden Rod in Great Britain. The home feeling which the sight of the latter aroused well nigh carried me away; and to the astonishment of the passengers the coach must stop to humor the "queer American." So I gathered the plant, which was the only specimen I found. It seemed to me a friend among strangers, as if it had strayed from the American flora. S. L., *Freehold, N. J.*

CURRENTS.

There is nothing easier to grow than the Currant, and, with us, nothing more profitable. Late years the ravages of the currant worm have induced the shiftless class to give up the struggle, making it profitable for the business men or women. The trouble of using Helebre two or three times during a season is a great bugbear to a happy-go-lucky individual, and I sometimes wonder how such people exist at all. The Fay Currant is a splendid variety to cultivate. a strong grower and heavy bearer; fruit very large, and with us stands the sun admirably. The old Cherry flourishes best in the shade.

M. A. H.

GARDEN NOTES.

I wish especially to recommend a few Geraniums of recent introduction that are rarely beautiful. First, Bruanti, which is semi-double; color a light vermillion. The individual pips are unusually large and the trusses are large and finely shaped. The foliage is handsome, deeply zoned, and the plant is of a compact, bushy habit. It is admirable for bedding out as well as for pot culture.

Arc-en-Ciel is a single variety that might with appropriateness be named Dazzle, for it is dazzling in its brightness, which may be owing to the vivid scarlet and orange blending into soft rose tints. It has also a bluish tint on two of the petals. The combination of colors is lovely and unique. The trusses are very large.

S. A. Nutt is a rich, dark crimson, double flowering, of compact growth; admirable.

Baron du Paynode, single, large flowers, orange vermillion, white eye.

Grand Chancellor, double, soft, velvety red, shaded with maroon. These are all very desirable varieties.

I can report very favorably on the novelty Rose, Vick's Caprice. It has two buds sufficiently open to reveal the feathery stripes. Being a hybrid perpetual, and a mailing plant, I had little expectation of its blooming this year, and it is surprising that it should be nearly ready to do so this 11th of July. It has been vigorous from the first. I am aware that it would be better for the plant to remove the buds, but I must see the open flower and then I will cut them off.

The new Petunia, Favorite, has been blooming continuously for five weeks. It is handsome; most of the flowers are dark, with white markings of different forms.

The new Clematis, Beauty of Worcester, has a large bud.

While there are those who speak despairingly of mailing plants, as though they were too small to be of much value, I do know that most of our leading florists pack and send out good, healthy plants that, with proper care, will go right on growing. From years of experience with mailing plants, I am of the opinion that when a purchaser fails, it is, as a rule, his own fault. When my plants are received I take them from the box, loosen the moss in which their roots are packed, and place them in a dish of tepid water, in an upright position, for half an hour; I have the water only sufficient to cover the roots. Meanwhile I prepare the pots, selecting sizes in proportion to the plants; a four and five-inch size is that mostly used; and then fill the pot about two-thirds full of good mixed soil; taking the plant, the roots, which are in a wad, by reason of the close packing, are spread out, and the plant is placed in the center of the pot and soil filled in to the top. Then I press the soil firmly down upon the roots, and a sufficient space is now left to allow for watering. This done, the plant is kept from the sun several days, and not wet again until the soil is dry. Great care is needful at first till the plant is established, for if too wet the plant becomes weakened, and if too dry it will perish. Until the plant begins to grow it needs only sufficient moisture to keep it alive. I have seen plants that were in mud, and in the shade a week or more, almost ruined by that time. Nearly all of my small plants, and many of medium size, I had out in pots, plunging them wholly beneath the soil; this keeps the roots in proper limit, and when a sudden cold snap threatens in the fall, it is very easy to remove them quickly to shelter. When I set immediately in the open ground plants received by mail, I protect them by putting newspapers over them, fastening them down with bits of stick; near night I remove them so that the plants may get the dew.

The everblooming Roses—by which I mean tender and hybrid Teas, and Poly-

anthas—set out in May, fifty or more, are nearly every one in bud, and several have bloomed, yet they were mailing size. I do not set these out in pots as I never take any up in the fall. The Polyanthas and hybrids, of course, are hardy, and the tender Teas are sodded around, and many come through all right, but if not, they are so cheap I do not mind, for one summer's blooming amply pays for them.

M. D. W., *Yarmouth, Me.*

McMAHON'S WHITE APPLE.

A note received from DR. HOSKINS says: "I wish to correct an error of the type in my article on 'The Best Iron-clad Apples,' in the *MAGAZINE* for July, where it says that 'McMahon's White is known (in Wisconsin,) as Wolf River and Pewaukee.'" I intended the idea to be expressed that McMahon's White is much hardier than those two Apples, neither of which have been able to survive the severer winters of northwestern Vermont."

EXPOSURES FOR VINEYARDS.

In regard to the injury by frost of the vineyards of Western New York, on the 28th of May last, Mr. S. S. CRISSEY, Secretary of the Chautauqua Horticultural Society, makes the following observation: The evident lesson of this frost to vineyardists is to plant vines in the most elevated, airy exposures. Both as a protection from mildew and late frosts, the importance of free, unobstructed ventilation cannot easily be overestimated.

NEW YORK STATE FAIR.

The fair of the New York State Agricultural Society will be held at Albany from the 12th to the 19th of September, and promises to be one of unusual interest in many respects. There are two hundred and forty-one entries for Vick's Cash Prizes for Vegetables, to be awarded at this exhibition. The prizes are fifty and twenty-five dollars each, first and second, for six different articles, as follows: Cabbage, for best three heads Fottler's Brunswick; Celery, best dozen plants Self-Blanching; Potatoes, best peck Ohio Jr.; Cauliflower, best three heads Vick's Ideal; Tomatoes, best dozen McCollum's Hybrid; Musk Melon, best three Irondequoit Melons. These

entries alone will make a grand exhibit of vegetables. With fruits, flowers, stock, implements, and miscellaneous articles, the show will undoubtedly be a grand one.

THE GARDEN'S STORY.

"The Garden's Story, or Pleasures and Trials of the Amateur Gardener," is the title of a book just issued from the press of D. Appleton & Company, of New York, the author of which is our fellow-townsmen, GEORGE H. ELLWANGER.

The book is inscribed to the Rev. C. WOLLEY DOD, of England, author of a work on hardy plants. The design of the present volume, the author says, is to direct attention to the importance of hardy flower-gardening as a means of outward adornment, and as a source of recreation. He still further says that it has been the aim to present a simple outline of hardy flower-gardening, rather than a formal treatise or text-book of plants—to stimulate a love for amateur gardening that may be carried out by all who are willing to bestow upon it that meed of attention it so bountifully repays.

The subjects have been treated so as to present the various aspects of the garden from early spring until late autumn. But the writer does not confine himself solely to the plant feature of the garden, for bird and insect life are so intimately connected with plants that he notices the birds and the bees, the moths and the butterflies.

To say that the information conveyed in this volume is accurate and reliable is only what might be expected of the author; but there is much more to say, and especially that the writer's ideas are expressed in language as appropriate and elegant as they are useful and correct. One can hardly read a page anywhere in this delightful book without thinking of WHITE's "History of Selborne," or even "The Round Year," by EDITH M. THOMAS—different, of course, but as delightfully expressed. We might quote with advantage, at almost any length, from the pages, but an extract or two must suffice. Here is a paragraph in regard to planting shrubs at the front of the lawn, an idea which, in various ways and at various times, has been set forth in our pages: "I like the hardy shrub border, the low-growing, and comparatively robust shrubs, for a screen next the highway; for no garden, I think

can be satisfactory without privacy. Glimpses of the interior may be afforded the passer-by, but retirement and shade constitute two of the greatest charms of the garden. The hardy shrub border combines privacy and beauty. In it I would have, among others, for the larger subjects, the Japan Quinces; many of the *Deutzias*; the common *Barberry*, for its colored fruit in autumn, the purple-leaved for its effective foliage; the light-colored *Althæas* or *Rose of Sharon*; the *Calycanthus*, or *Sweet-scented Shrub*, for its fragrance; the large-flowered and changeable *Hydrangea*; the dwarf and golden-leaved *Syringas* or *Mock-Orange*; the purple-flowering *Prunus*; the *Spiræas* in variety; the fragrant *Ribes*, or yellow-flowering *Currant*; some of the smaller *Lilacs*; the dwarf sweet-scented *Magnolia Halleana*; the *Exochorda*, the *Daphne mezereum*, the variegated *Dogwood*, the white *Weigela*, the purple-leaved *Plum*, the cut-leaved *Sumac*; the golden, fern-leaved, and cut-leaved *Elder*."

We all know how the first breath of summer seems to give new life. And thus says our author: "You would know by the scent of the *Lilacs* that summer was here. How fragrant the censer of June! how profuse with the scent of blossoming vegetation!—odors not alone from myriads of plants, but breathing from orchards, hedges and thickets, rising from woods and hill-sides, blown from far meadows and pastures. What an exhalation of millions of opening petals, mingled with the scent of green growing things. It seems as if nature could not do enough when her appointed time arrives; as if there were no end to her prodigality of bloom and song and color, and sunshine; birds singing amid the orchard blossoms, bees plunging into the flowercups, meadows smothered with buttercups, swamps golden with *marsh-marigolds*, woods aflame with *honeysuckles*, fields crimson with clover, bird-song, insect-hum, and flower-blossom on every side!"

Our advice to every garden-lover is this: get the book and read it, and then keep it as a perpetual possession.

THE MAGAZINE FOR 1890.

We have in preparation for our subscribers for another year a beautiful work of art, and are assured by the artists en-

gaged upon it that it will be a gem, and, from some sketches seen, we have no doubt of it. It is a poem by an American author, and will be illustrated by twelve exquisite sketches, of quarto size, on heavy plate paper. The matter is very clever, and will be interesting to every one. It is one of the finest things a publisher ever sent out, and cannot fail to be admired.

We want an agent at every post-office, to secure subscribers to the *MAGAZINE*, and a liberal arrangement will be made in payment for service of this kind.

Specimens of the *MAGAZINE*, and some specimen pages of the Poem, will be supplied to agents as soon as they can be prepared. An active agent, we are sure, will be able to make a good thing of this agency, and full particulars will be given on application. Young men or ladies will be able to do well in making a canvass with the samples, which we expect to be ready to supply some time in September. Now, please send in your names as agents, and get instructions preparatory to commencing next month. Where no one canvasses from house to house, postmasters should not fail to apply for specimens and instructions, for they will be able to make up large lists of subscribers. Send in names at once!

WORK FOR THE MONTH.

Making new *Strawberry* plantations ought to be successfully done in this season of frequent showers. The present month is the best time for transplanting. Plowing, cultivating, grading and sowing of grounds for new lawns should be proceeded with this month as the best time in the whole year. Seeds of hardy annuals and perennials can be sowed, such as *Pansy*, *Sweet William*, *Hollyhocks*, *Perennial Poppy*, *Chinese Pinks*, *Aquilegia*, *Lychnis*, *Canterbury Bell*, and other perennial *Campanulas*, *Foxglove*, *Rockets*, etc.

Spinach for fall use can be sowed the early part of the month, and for spring near the close. *Winter Radish*, and *Cress* and *Turnip* can be sowed. Cuttings of many kinds of flowering plants can now be made and easily rooted in the open border. Many kinds of greenhouse and window plants intended for winter blooming can be repotted this month; *Callas*, *Geraniums*, *Begonias*, etc.

OUR YOUNG PEOPLE.

HAPPY RE-UNION.

(CONCLUDED.)

Hardly four weeks had elapsed after the re-union at Harry Blake's until there might have been seen the white gleam of two tents between the drooping branches of Elms that bordered a bit of the shore of Gem Lake.

Approaching nearer, and peering under and between boughs and tents, the observer could have spied the back of a curiously constructed chair (with pendant tablets for arms, to be raised at will), on which sat a noble browed youth intent upon hook and line. On either side of him would be seen, at various distances apart, his friends, Frank and Tom, also their cousins, Purdy and Vance, all equally absorbed in decoying from their haunts the shining beauties that loved to dally in the deep water under the shadowing Elms.

A hammock, with self-supporting standards and canopy-top, standing not far away, afforded both shade and rest at the end of the daily excursions made to the Big Marsh in the interest of Harry's aquarium, which was to be stocked upon their return.

While Scipio, too, the ever faithful, ever active servitor would be visible, vibrating between his multifarious duties and his precious charge, as he silently kept supervision of tackle and bait, his ebony features lighted up with the white of his gleaming ivories whenever Harry caught something worthy of his culinary skill, and especially when the others had failed.

This, then, is the picture in outline that the observer catches, as he unobtrusively saunters along outside the Elms. Every man and boy who has ever "struck" a tent or cast a line can fill it out, put in the finishing touches of light and shade, and give it a tone of varying detail to suit himself.

But there were two actual conditions of this picture that greatly enhanced its elevated character and purity of tone, which it would be a sad pity for any one

to introduce when touching it up to suit his own fancy. One, was the absence of coarse or impure literature with which to beguile a rainy day or an idle hour. The other, was the absence of any bottled liquid, either spirituous or fermented. They had plenty of lemons, good coffee and tea, and a well full of pure cold water at the "haunted house," near by. In one of the tents was a charming book by Thoreau, who himself dwelt close to the heart of his foster-mother; in the other was a volume by Philip Gilbert Hammerton, than whom no other writer ever put into printed words more clearly the sweet soul of nature, or portrayed her outer semblance of outline and color with more fidelity.

In the meanwhile, Stella, Fanny and Grace had been joined by two or three of their friends, by pre-arrangement, and, as the mothers were old-fashioned enough to believe that daughters are the better in many ways for having certain home duties and interests interspersed with their visits and recreations, it came to pass that while assembled in each other's homes alternately, the mornings were often occupied in services that made the evening tea-table a charming place to gather round. And this was a customary after-breakfast rallying call:

"Girls, which of you will stone the cherries, while I whip the cream?" Or, "Who'll beat the eggs, while I grate the lemons?" etc. (For the most competent serving woman cannot do everything where there's a house full of rollicking girls.) Perhaps, in the early morning, there had been a troop of girls on horseback, when every nag, from the fine saddle horse to the sedate roadster, had been appropriated, regardless of gait or other minor points, considering only the exhilaration and the fun of a scamper on some by-road, quite out of the way of any stray critic who had risen too early. Or, may be they would take their ride in the cool of the evening, remaining out

until the broad moon had sailed up to look at them.

Then, too, there were places of interest in the neighborhood that had to be visited, requiring a regular excursion and luncheon baskets; while every day one or more of the girls might be heard, exclaiming, "I'll venture we're having a better time than the boys are—the selfish fellows."

Now, having looked up the girls long enough to make certain that they are quite able to entertain themselves, we'll return to camp. Here we find that as fast as the cans are emptied by Scipio in his culinary department, they are appropriated by the boys and crowned by some marsh plant or other, whose roots repose in their native muck and water inside, or else they contain something that Frank is very particular to designate as a "bivalve," or an "uni-valve," or a "crustacean."

Scipio viewed with much disgust this use made of the empty cans. "'Clar' to goodness," he said to himself, "dem chaps jess fahly hu'tin' deyse'ves eatin', dey, s in sich mighty haste ter git all dese yer cans empty, so's dey kin put dem dah weeds in 'em. Suttinly I neber seed sich eatahs afo. Seem like dey dunno w'en dey's got nuf. Dey don't, sholy. Can't all be in de a'r, like dey talk 'bout. De a'r jess like what we come f'om. Dey dun gone crazy 'bout dem weeds, an' fa'hly choke deyse'ves to empty de cans. Only fo' de feesh dey cotches, we uns jess sta'hve right yer, sho'."

But there was no danger of short rations. It was only that Scipio's pride had been touched at the last meal, when he had failed to make allowance all around for the surprising appetites the boys had developed, and had been unable to replenish a certain hot dish upon which they had made numerous drafts. This he had taken seriously to heart as reflecting upon his ability to provide.

The dimensions of the new aquarium were such as to accommodate a large variety of plants, hence everything desirable was secured for trial and test. An important addition was to be made from the south, selected and forwarded by Mr. Gerald McCarthy. Among them were to be included the rare Arrow-leaved Yellow Water Lily, *Nuphar sagittifolia*, or Alligator's Bonnets; the glossy-

leaved Spoon Flower, *Zanthosoma sagittifolia*; the Water Shield, *Brasenia peltata*; some specimens of Pipewort and the fish-trapping Bladderwort. The latter promised to be a curiosity, and might possibly have to be kept by itself, if really destructive to fish. Harry had wondered about it.

The weather of the first few days was propitious, there having been but one or two showers, which had done no further harm than to make the fish bite hungrily. But finally there came a day when the sky seemed threatening something more serious, and Scipio was told that he'd probably have to cook and serve supper in the haunted house, and to sleep there, too.

The boys bundled up and carried thence whatever might be needed, or would be spoiled by rain. But lo, Scipio, the faithful, suddenly revolted, and while the clouds loomed up thicker and blacker all over the sky, Harry was trying to convince him that there were no such things as ghosts, telling him, finally, that he might sleep under a tent in the storm, if he preferred it. "But, Scip," he added, "you know you are not going to be afraid to sleep where I do. What would father say if you deserted me like that?"

But before all had been transferred, the culminating clouds sent down a volley of hailstones, pelting them without mercy. The air every moment grew more chill, until a cold wind and fine, driving rain made our party thankful for tight walls and sheltering roof.

Scipio's anxiety lest Harry should take cold and have a chill (to which he had been subject in the past) made him oblivious to all other fears.

The boys had each one brought some waste wood to the house to heat up an old broken "parlor cook-stove," standing in the kitchen. They cut it up while urging Scipio to get his kerosene stove along side of it and fire up, for they were ravenously hungry. Scip declared they'd been that way most of the time since they camped out, and added, "Ef you uns *more* hongry to-night you'se 'll jess have to eat up dese yer skilletts and cans to finish up on."

At last the supper was ended, the skilletts and cans still safe, and the boys commenced making up their pallets, while Scipio cleared up his kitchen work.

Plenty of hot tea had warmed them all up, especially Harry, who being unable to exercise, had really become quite chilled.

Two pallets were arranged in the dining-room, and two in the parlor adjoining. Harry directed his hammock to be placed in the bed-room opening from the dining-room, so that Scipio could be indulged in sleeping on the floor near him, without intruding upon the privacy of others.

Then a few chapters of Thoreau were read and discussed, after which the boys tumbled into their beds, and the spicy subject of ghosts being introduced, on account of their African brother, all were soon asleep, or nearly so, when—great heavens and earth! what thundering, crashing, explosive noise was that! inside the very house, too! The walls and floors had shaken—the whole house had jarred and trembled, while the sound was perfectly terrific!

The boys, with one accord, rushed to Harry's room, where a light was burning. His great eyes were shining with excitement, but that was all—no tremor nor exclamations. Scipio lay writhing on the floor, yelling and praying at the same breath.

"Boys," said Harry, "that explosion, whatever caused it, was in the next room, the kitchen. I fear Scip has been careless with his kerosene. There may be fire out there—open the door, quick; we don't want to burn up."

But there was no fire; though there were stove doors and pieces of iron and tin buried in the walls and ceiling of the room, and splashes of water and coals and ashes everywhere. Pieces of sash and panes of glass were gone where the flying missiles had gone through. Nothing was left of the "two-story" stove but the bottom—the fire-plate, with some jagged bits of iron yet attached. There was no odor of kerosene, the stove itself stood intact, for a wonder. It was a mystery. The impulsive force had plainly been inside the other stove. What was it? Who placed it there?

At last one of the boys picked up from the debris what appeared to be the head end of a round can, having a brass stopper screwed in. To the stopper was attached a strong brass ring. Then Frank remembered having seen a long tin can swinging to one of Scipio's fingers by a

brass ring, when they were all moving the things to the house.

"This is it," he said, "now we'll find out what the fellow had in it," and he rushed into the bed-room, telling Scipio to stop that hullabaloo, and look at what he had.

"It's you, yourself, that raised all this rumpus, and played the mischief with things."

Poor Scipio was dumb-founded—speechless. But Harry, greatly relieved at sight of brass attachment of screw and ring, hastened to explain that they had belonged to a hot-water can made of block tin, and water tight, for using in the sick room, either to warm a chilled bed or to place against the person of the patient.

"Yes, sah," said Scipio, who now recovered speech, "an' I filled de can an' rolled it in dat dah oven, an' built up a fiah de las' thing, kase I'se afeered Master Harry might wake up wid a chill, like he did onct at home, an' then I'd have this yer ready to put to his back."

"We'll have to excuse you, because of your intended kindness," said Harry, "but you certainly know that steam will explode an engine boiler, and so you needn't think you can pen it up in a tin can."

"I hope you kin all excuse me, an' I'll go now an' clean up dat dah muss, ef it take me till mawnin'."

"No, no," said Harry, "you lie down here and get some sleep. You may get up early and go at it, while we are snoozing still."

So all were soon settled again. The rain still continued, and the boys noted with satisfaction an open fire-place, and promised themselves a cheery blaze along with their reading in the morning.

"I'm not sure," said Purdy, "but I'll put on waterproof armor and try fishing instead; sometimes while raining the fish do bite gloriously."

"And I'll go with you," said Vance, "and try my luck."

"All right," said Tom, "we'll stay with Harry, and perhaps take our turn when you come back: for rain or not, I think our headquarters will be here for another day or two, the ground is so thoroughly wet and chill. And now, good night, I'm off to dreamland."

MARIA BARRETT BUTLER.

THE FLOWER IN THE PATHWAY.

There was a bed of beautiful Petunias in the garden. They were of all colors, that is, almost all colors, and no two were exactly alike. Some were blotched and some were striped, and some had smooth edges and some were fringed. And they were of different sizes, too, some being very large, some large, some small, and some very small. And the very smallest of all was a lovely pink one, which, tiny as it was, held the highest rank among them, for it was a Countess. Yes, indeed, the Countess of Ellesmere.

These flowers were happy flowers. The great yellow-coated bees, and the velvet-winged butterflies, and the big, bright moths that look and hum like humming birds, came to see them, morn, noon and eve, and the sun, and the rain, and the breeze never tired of telling them how lovely they were. But in spite of all this, the little Countess became discontented. "I know I'm just too sweet for anything," she said, one bright day, "but, dear me, how can I be seen among all this crowd? You are all of you so much bigger than I am that I am sure the garden visitors never notice me. Now, out in the pathway there, with no other flower near her, is growing one of my cousins. No one could fail to see her, though she is almost as small as I am, and I heard several people say, yesterday, oh, look at that cunning little thing, growing right in the pathway. I wish I had happened to grow out there."

"That is a very foolish wish," said all the rest of the Petunias in a chorus. "You are now in your proper place, and it is very naughty of you to be wishing." But before they could say any more, two little girls, with their arms around each other's waists, came skipping along, and as they skipped by away went the flower that grew in the pathway, and that was the last of it. And then, "Oh, dear, how glad I am that I didn't happen to grow out there," said the small, pink Countess of Ellesmere.

MARGARET EYTINGE.

